

## SUBSTITUTED AZOLE DERIVATIVES AS THERAPEUTIC AGENTS

Statement of Related Application

The present application claims priority under 35 USC 119 from US Provisional  
5 Application Serial No. 60/446,977, filed February 12, 2003, the disclosure of which is incorporated by reference.

Field of the Invention

This invention relates to compounds which may be inhibitors of protein tyrosine  
10 phosphatases (PTPases), which can be useful for the management, treatment, control, or adjunct treatment of diseases caused by over-activity of PTPases.

Background of the Invention

The process of protein phosphorylation is now recognized as central to the  
15 fundamental processes of cellular signal transduction. Alterations in protein phosphorylation, may therefore constitute either a physiological or pathological change in an *in vivo* system. Protein de-phosphorylation, mediated by phosphatases, is also central to certain signal transduction processes.

The two major classes of phosphatases are (a) protein serine/threonine  
20 phosphatases (PSTPases), which catalyze the dephosphorylation of serine and/or threonine residues on proteins or peptides; and (b) the protein tyrosine phosphatases (PTPases), which catalyze the dephosphorylation of tyrosine residues on proteins and/or peptides. A third class of phosphatases is the dual specificity phosphatases, or DSP's, which possess the ability to act both as PTPases and as PSTPases.

25 Among the PTPases there exist two important families, the intracellular PTPases, and the transmembrane PTPases. The intracellular PTPases include PTP1B, STEP, PTPD1, PTPD2, PTPMEG1, T-cell PTPase, PTPH1, FAP-1/BAS, PTP1D, and PTP1C. The transmembrane PTPases include LAR, CD45, PTP $\alpha$ , PTP $\beta$ , PTP $\delta$ , PTP $\epsilon$ , PTP $\xi$ , PTP $\kappa$ , PTP $\mu$ , PTP $\sigma$ , HePTP, SAP-1, and PTP-U2. The dual – specificity phosphatases  
30 include KAP, cdc25, MAPK phosphatase, PAC-1, and rVH6.

The PTPases, especially PTP1B, are implicated in insulin insensitivity characteristic of type II diabetes (Kennedy, B.P.; Ramachandran, C. *Biochem. Pharm.* **2000**, *60*, 877-883). The PTPases, notably CD45 and HePTP, are also implicated in

TTP 2002-08

immune system function, and in particular T-cell function. Certain PTPases, notably TC-PTP, DEP-1, SAP-1, and CDC25, are also implicated in certain cancers. Certain PTPases, notably the bone PTPase OST-PTP, are implicated in osteoporosis. PTPases are implicated in mediating the actions of somatostatin on target cells, in particular the secretion of hormone and/or growth factor secretion.

Thus, there is a need for agents which inhibit the action of protein tyrosine phosphatases. Such agents would be useful for the treatment of Type I diabetes, Type II diabetes, immune dysfunction, AIDS, autoimmunity, glucose intolerance, obesity, cancer, psoriasis, allergic diseases, infectious diseases, inflammatory diseases, diseases involving the modulated synthesis of growth hormone or the modulated synthesis of growth factors or cytokines which affect the production of growth hormone, or Alzheimer's disease.

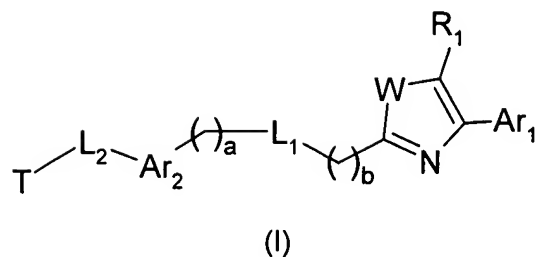
#### Summary of the Invention

This invention provides azoles which are useful as inhibitors of PTPases. In an embodiment, the present invention provides compounds of Formula (I) as depicted below, methods of their preparation, pharmaceutical compositions comprising the compounds and their use in treating human or animal disorders. The compounds of the invention are useful as inhibitors of protein tyrosine phosphatases and thus are useful for the management, treatment, control and adjunct treatment of diseases mediated by PTPase activity. Such diseases include Type I diabetes, Type II diabetes, immune dysfunction, AIDS, autoimmunity, glucose intolerance, obesity, cancer, psoriasis, allergic diseases, infectious diseases, inflammatory diseases, diseases involving the modulated synthesis of growth hormone or the modulated synthesis of growth factors or cytokines which affect the production of growth hormone, or Alzheimer's disease.

#### Detailed Description of the Invention

In a first aspect, the present invention provides azole inhibitors of protein tyrosine phosphatases (PTPases) which can be useful for the management and treatment of disease caused by PTPases.

In a second aspect, the present invention provides compounds of Formula (I):



wherein a and b are, independently, equal to 0, 1, or 2, wherein the values of 0, 1, and 2 represent a direct bond,  $-\text{CH}_2-$ , and  $-\text{CH}_2\text{CH}_2-$ , respectively, and wherein the  $-\text{CH}_2-$  and  $-\text{CH}_2\text{CH}_2-$  groups are optionally substituted 1 to 2 times with a substituent group, wherein said substituent group(s) comprise: -alkyl, -aryl, -alkylene-aryl, -arylene-alkyl, -alkylene-arylene-alkyl, -O-alkyl, -O-aryl, and -hydroxyl. In an embodiment, a and b are equal to 0.

W comprises  $-\text{O}-$ ,  $-\text{S}-$ , or  $-\text{N}(\text{R}_2)-$ ,

wherein

$\text{R}_2$  comprises

- a) -hydrogen;
- b) -alkyl;
- c)  $-\text{L}_3\text{-D-G}$
- d)  $-\text{L}_3\text{-D-alkyl}$ ;
- e)  $-\text{L}_3\text{-D-aryl}$ ;
- f)  $-\text{L}_3\text{-D-heteroaryl}$ ;
- g)  $-\text{L}_3\text{-D-cycloalkyl}$ ;
- h)  $-\text{L}_3\text{-D-heterocyclyl}$ ;
- i)  $-\text{L}_3\text{-D-arylene-alkyl}$ ;
- j)  $-\text{L}_3\text{-D-alkylene-arylene-alkyl}$ ; and
- k)  $-\text{L}_3\text{-D-alkylene-aryl}$ ;
- l)  $-\text{L}_3\text{-D-alkyl-G}$ ;
- m)  $-\text{L}_3\text{-D-aryl-G}$ ;
- n)  $-\text{L}_3\text{-D-heteroaryl-G}$ ;
- o)  $-\text{L}_3\text{-D-cycloalkyl-G}$ ;
- p)  $-\text{L}_3\text{-D-heterocyclyl-G}$ ;
- q)  $-\text{L}_3\text{-D-arylene-alkyl-G}$ ;

r) – L<sub>3</sub>-D-alkylene-arylene-alkyl-G; or

s) – L<sub>3</sub>-D-alkylene-arylene-G;

wherein

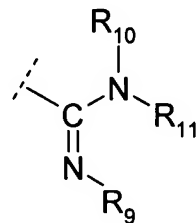
5 L<sub>3</sub> comprises a direct bond, –alkylene, –alkenylene, or alkynylene;

D comprises a direct bond, –CH<sub>2</sub>–, –O–, –N(R<sub>5</sub>)–, –C(O)–, –CON(R<sub>5</sub>)–, –N(R<sub>6</sub>)C(O)–, –N(R<sub>6</sub>)CON(R<sub>5</sub>)–, –N(R<sub>5</sub>)C(O)O–, –OC(O)N(R<sub>5</sub>)–, –N(R<sub>5</sub>)SO<sub>2</sub>–, –SO<sub>2</sub>N(R<sub>5</sub>)–, –C(O)–O–, –O–C(O)–, –S–, –S(O)–, –S(O<sub>2</sub>)–, or –N(R<sub>5</sub>)SO<sub>2</sub>N(R<sub>6</sub>)–, –N=N–, or –N(R<sub>5</sub>)–N(R<sub>6</sub>)–;

10 wherein

R<sub>5</sub> and R<sub>6</sub> independently comprise: –hydrogen, –alkyl, –aryl, –arylene-alkyl, –alkylene-aryl, or –alkylene-arylene-alkyl; and

G comprises hydrogen, –CN, –SO<sub>3</sub>H, –P(O)(OH)<sub>2</sub>, –P(O)(O-alkyl)(OH), –

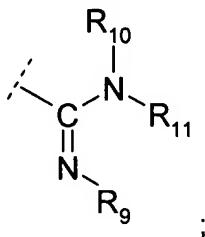


CO<sub>2</sub>H, –CO<sub>2</sub>-alkyl, an acid isostere, –NR<sub>7</sub>R<sub>8</sub>, or

;

15 wherein

R<sub>7</sub> and R<sub>8</sub> independently comprise: hydrogen, –alkyl, –L<sub>4</sub>-E-alkyl, –L<sub>4</sub>-E-aryl, –C(O)-alkyl, –C(O)-aryl, –SO<sub>2</sub>-alkyl, –SO<sub>2</sub>-aryl, or



;

wherein

20 R<sub>9</sub>, R<sub>10</sub>, and R<sub>11</sub> independently comprise: –hydrogen, –alkyl, –aryl, –arylene-alkyl, –alkylene-aryl, and –alkylene-arylene-alkyl;

L<sub>4</sub> comprises a direct bond, –alkylene, –alkenylene, or –alkynylene;



E comprises a direct bond,  $-\text{CH}_2-$ ,  $-\text{O}-$ ,  $-\text{N}(\text{R}_{12})-$ ,  $-\text{C}(\text{O})-$ ,  
 $-\text{CON}(\text{R}_{12})-$ ,  $-\text{N}(\text{R}_{12})\text{C}(\text{O})-$ ,  $-\text{N}(\text{R}_{12})\text{CON}(\text{R}_{13})-$ ,  
 $-\text{N}(\text{R}_{12})\text{C}(\text{O})\text{O}-$ ,  $-\text{OC}(\text{O})\text{N}(\text{R}_{12})-$ ,  $-\text{N}(\text{R}_{12})\text{SO}_2-$ ,  $-\text{SO}_2\text{N}(\text{R}_{12})-$ ,  
 $-\text{C}(\text{O})\text{O}-$ ,  $-\text{O}-\text{C}(\text{O})-$ ,  $-\text{S}-$ ,  $-\text{S}(\text{O})-$ ,  $-\text{S}(\text{O}_2)-$ ,  $-\text{N}(\text{R}_{12})\text{SO}_2\text{N}(\text{R}_{13})-$   
 5 ,  $-\text{N}=\text{N}-$ , or  $-\text{N}(\text{R}_{12})-\text{N}(\text{R}_{13})-$

wherein

$\text{R}_{12}$  and  $\text{R}_{13}$  independently comprise: -hydrogen, -alkyl,  
 -aryl, -arylene-alkyl, -alkylene-aryl, or -alkylene-  
 10 arylene-alkyl.

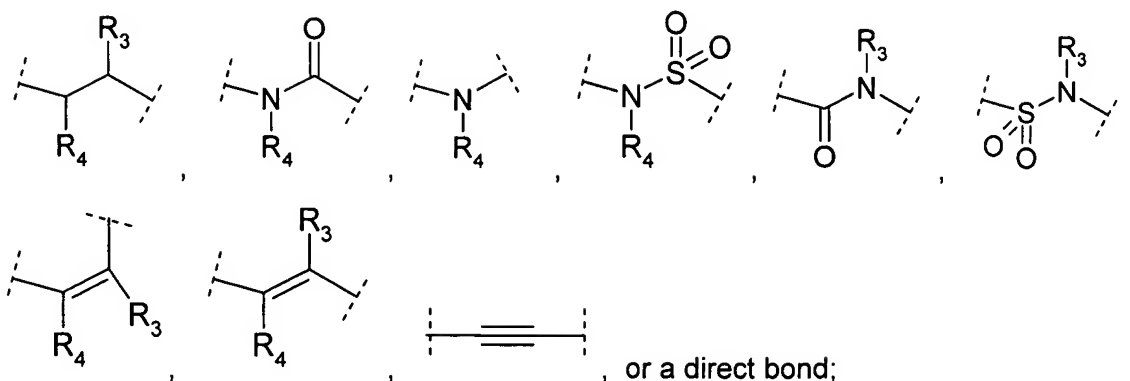
In further embodiments, W comprises  $-\text{O}-$  or  $-\text{N}(\text{R}_2)-$ , wherein  $\text{R}_2$  comprises  
 hydrogen, alkyl, or  $-\text{L}_3\text{-D-alkylene-aryl}$ , wherein  $\text{L}_3$  comprises alkylene, and D comprises  
 $-\text{CO}(\text{NR}_5)-$ , wherein  $\text{R}_5$  comprises hydrogen. In other embodiments, W comprises  $-\text{N}(\text{R}_2)-$ , wherein  $\text{R}_2$  comprises hydrogen.

15  $\text{R}_1$  comprises

- a) -hydrogen;
- b) -fluoro;
- c) -chloro;
- 20 d) -bromo;
- e) -iodo;
- f) -cyano;
- g) -alkyl;
- h) -aryl;
- 25 i) -alkylene-aryl;
- j) -heteroaryl;
- k) -alkylene-heteroaryl;
- l) -cycloalkyl;
- m) -alkylene-cycloalkyl
- 30 n) - heterocyclyl; or
- o) - alkylene-heterocyclyl;

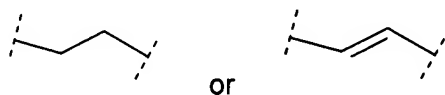
In another embodiment,  $\text{R}_1$  comprises hydrogen or aryl.

L<sub>1</sub> comprises:

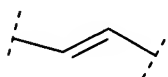


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wherein R<sub>3</sub> and R<sub>4</sub> independently comprise: hydrogen, chloro, fluoro, bromo, alkyl, aryl, -alkylene-aryl, -cycloalkyl, -alkylene-cycloalkyl, -heterocyclyl, -alkylene-heterocyclyl, or -alkynylene. In another embodiment, L<sub>1</sub> comprises



In another embodiment, L<sub>1</sub> comprises



10

Ar<sub>1</sub> comprises an aryl, heteroaryl, fused cycloalkylaryl, fused cycloalkylheteroaryl, fused heterocyclylaryl, or fused heterocyclylheteroaryl group optionally substituted 1 to 7 times. In an embodiment, Ar<sub>1</sub> comprises a mono- or bicyclic aryl group optionally substituted 1 to 7 times. In another embodiment, Ar<sub>1</sub> comprises a phenyl or naphthyl group optionally having 1 to 5 substituents, wherein the substituents independently comprise:

- a) -fluoro;
- b) -chloro;
- c) -bromo;
- d) -iodo;
- e) -cyano;
- f) -nitro;
- g) -perfluoroalkyl;
- h) -J-R<sub>14</sub>;

20

25

- 5
- i) -alkyl;
  - j) -aryl;
  - k) -heteroaryl;
  - l) -heterocyclyl;
  - m) -cycloalkyl;
  - n) -L<sub>5</sub>-aryl;
  - o) -L<sub>5</sub>-arylene-aryl;
  - p) -L<sub>5</sub>-arylene-alkyl;
  - q) -arylene-alkyl;

10

  - r) -arylene-arylene-alkyl;
  - s) -J-alkyl;
  - t) -J-aryl;
  - u) -J-alkylene-aryl;
  - v) -J-arylene-alkyl;

15

  - w) -J-alkylene-arylene-aryl;
  - x) -J-arylene-arylene-aryl;
  - y) -J-alkylene-arylene-alkyl;
  - z) -L<sub>5</sub>-J-alkylene-aryl;
  - aa) -arylene-J-alkyl;

20

  - bb) -L<sub>5</sub>-J-aryl;
  - cc) -L<sub>5</sub>-J-heteroaryl;
  - dd) -L<sub>5</sub>-J-cycloalkyl;
  - ee) -L<sub>5</sub>-J-heterocyclyl;
  - ff) -L<sub>5</sub>-J-arylene-alkyl;

25

  - gg) -L<sub>5</sub>-J-alkylene-arylene-alkyl;
  - hh) -L<sub>5</sub>-J-alkyl;
  - ii) -L<sub>5</sub>-J-R<sub>14</sub>;
  - jj) -arylene-J-R<sub>14</sub>; or
  - kk) -hydrogen;

30

wherein L<sub>5</sub> comprises a direct bond, -alkylene, -alkenylene, or -alkynylene; and wherein J comprises a direct bond, -CH<sub>2</sub>-, -O-, -N(R<sub>15</sub>)-, -C(O)-, -CON(R<sub>15</sub>)-, -N(R<sub>15</sub>)C(O)-, -N(R<sub>15</sub>)CON(R<sub>16</sub>)-, -N(R<sub>15</sub>)C(O)O-, -OC(O)N(R<sub>15</sub>)-, -N(R<sub>15</sub>)SO<sub>2</sub>-, -SO<sub>2</sub>N(R<sub>15</sub>)-, -C(O)-O-, -O-C(O)-, -S-, -S(O)-, -S(O<sub>2</sub>)-, -N(R<sub>15</sub>)SO<sub>2</sub>N(R<sub>16</sub>)-, -N=N-, or -

$N(R_{15})-N(R_{16})-$ , and wherein  $R_{14}$ ,  $R_{15}$ , and  $R_{16}$  independently comprise: -hydrogen, -alkyl, -aryl, -arylene-alkyl, -alkylene-aryl, or -alkylene-arylene-alkyl.

In another embodiment,  $Ar_1$  is a phenyl group optionally substituted 1 to 5 times,  
5 wherein the substituents independently comprise:

- a) -fluoro;
- b) -chloro;
- c) -bromo;
- d) -iodo;
- 10 e) -cyano;
- f) -nitro; or
- g) -aryl.

In another embodiment,  $Ar_1$  comprises a phenyl group substituted 1 to 5 times,  
15 wherein the substituents comprise: -chloro or -fluoro.

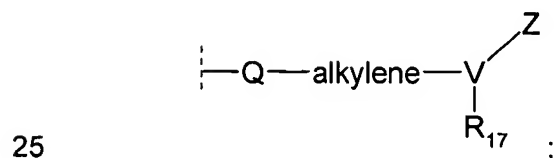
$Ar_2$  comprises an arylene, heteroarylene, fused arylcycloalkylene, fused  
cycloalkylarylene, fused cycloalkylheteroarylene, fused heterocyclarylene, or fused  
heterocyclheteroarylene group optionally substituted 1 to 7 times.  $Ar_2$  may also be  
20 taken in combination with  $R_4$  to constitute a fused arylcycloalkylene, fused  
cycloalkylarylene, fused cycloalkylheteroarylene, fused heterocyclarylene, or fused  
heterocyclheteroarylene group, optionally substituted 1 to 7 times. In an embodiment,  
 $Ar_2$  comprises an arylene group optionally substituted 1 to 7 times. In another  
embodiment,  $Ar_2$  comprises a phenylene or naphthylene group optionally having 1 to 5  
25 substituents, wherein the substituents independently comprise:

- a) -fluoro;
- b) -chloro;
- c) -bromo;
- d) -iodo;
- 30 e) -cyano;
- f) -nitro;
- g) -perfluoroalkyl;
- h) -Q- $R_{17}$ ;
- i) -alkyl;

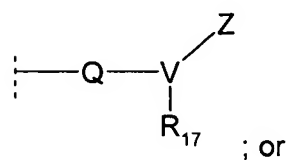
- |    |     |   |
|----|-----|---|
|    | j)  | -aryl;  |
|    | k)  | -heteroaryl;  |
|    | l)  | -heterocyclyl;  |
|    | m)  | -cycloalkyl;  |
| 5  | n)  | - L <sub>6</sub> -aryl;                                   |
|    | o)  | - L <sub>6</sub> -arylene-aryl;                           |
|    | p)  | - L <sub>6</sub> -arylene-alkyl;                          |
|    | q)  | -arylene-alkyl;   |
|    | r)  | -arylene-arylene-alkyl;                                   |
| 10 | s)  | -Q-alkyl;   |
|    | t)  | -Q-aryl;  |
|    | u)  | -Q-alkylene-aryl;   |
|    | v)  | -Q-arylene-alkyl;   |
|    | w)  | -Q-alkylene-arylene-aryl;                                 |
| 15 | x)  | -Q-arylene-arylene-aryl;                                  |
|    | y)  | -Q-alkylene-arylene-alkyl;                                |
|    | z)  | - L <sub>6</sub> -Q-alkylene-aryl;                        |
|    | aa) | -arylene-Q-alkyl;   |
|    | bb) | - L <sub>6</sub> -Q-aryl;                                 |
| 20 | cc) | - L <sub>6</sub> -Q-heteroaryl;                           |
|    | dd) | - L <sub>6</sub> -Q-cycloalkyl;                           |
|    | ee) | - L <sub>6</sub> -Q-heterocyclyl;                         |
|    | ff) | - L <sub>6</sub> -Q-arylene-alkyl;                        |
|    | gg) | - L <sub>6</sub> -Q-alkylene-arylene-alkyl;               |
| 25 | hh) | - L <sub>6</sub> -Q-alkyl;                                |
|    | ii) | - L <sub>6</sub> -Q-alkylene-aryl-R <sub>17</sub> ;       |
|    | jj) | - L <sub>6</sub> -Q-alkylene-heteroaryl-R <sub>17</sub> ; |
|    | kk) | -arylene-Q-alkylene-R <sub>17</sub> ;                     |
|    | ll) | -heteroarylene-Q-alkylene-R <sub>17</sub> ;               |
| 30 | mm) | - L <sub>6</sub> -Q-aryl-R <sub>17</sub> ;                |
|    | nn) | - L <sub>6</sub> -Q-heteroarylene-R <sub>17</sub> ;       |
|    | oo) | - L <sub>6</sub> -Q-heteroaryl-R <sub>17</sub> ;          |
|    | pp) | - L <sub>6</sub> -Q-cycloalkyl-R <sub>17</sub> ;          |
|    | qq) | - L <sub>6</sub> -Q-heterocyclyl-R <sub>17</sub> ;        |

- rr) – L<sub>6</sub>-Q-arylene-alkyl-R<sub>17</sub>;  
 ss) – L<sub>6</sub>-Q-heteroarylene-alkyl-R<sub>17</sub>;  
 tt) – L<sub>6</sub>-Q-alkylene-arylene-alkyl-R<sub>17</sub>;  
 uu) – L<sub>6</sub>-Q-alkylene-heteroarylene-alkyl-R<sub>17</sub>;  
 5 vv) – L<sub>6</sub>-Q-alkylene-cycloalkylene-alkyl-R<sub>17</sub>;  
 ww) – L<sub>6</sub>-Q-alkylene-heterocyclylene-alkyl-R<sub>17</sub>;  
 xx) – L<sub>6</sub>-Q-alkyl-R<sub>17</sub>;  
 yy) – L<sub>6</sub>-Q-R<sub>17</sub>;  
 zz) -arylene-Q-R<sub>17</sub>;  
 10 aaa) -heteroarylene-Q-R<sub>17</sub>;  
 bbb) -heterocyclylene-Q-R<sub>17</sub>;  
 ccc) -Q-alkylene-R<sub>17</sub>;  
 ddd) -Q-arylene-R<sub>17</sub>;  
 eee) -Q-heteroarylene-R<sub>17</sub>;  
 15 fff) -Q-alkylene-arylene-R<sub>17</sub>;  
 ggg) -Q-alkylene-heteroarylene-R<sub>17</sub>;  
 hhh) -Q-heteroarylene-alkylene- R<sub>17</sub>;  
 iii) -Q-arylene-alkylene- R<sub>17</sub>;  
 jjj) -Q-cycloalkylene-alkylene- R<sub>17</sub>;  
 20 kkk) -Q-heterocyclylene-alkylene- R<sub>17</sub>;  
 III) -Q-alkylene-arylene-alkyl- R<sub>17</sub>;  
 mmm) -Q-alkylene-heteroarylene-alkyl- R<sub>17</sub>;

III)



mmm)



nnn) -hydrogen

wherein

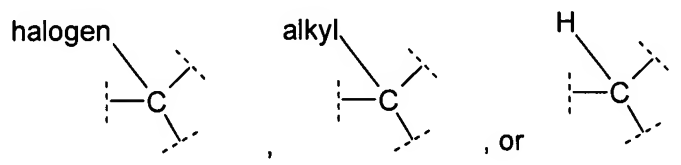
$L_6$  comprises a direct bond, -alkylene, -alkenylene, or -alkynylene;

Q comprises a direct bond,  $-CH_2-$ ,  $-O-$ ,  $-N(R_{18})-$ ,  $-C(O)-$ ,  $-CON(R_{18})-$ ,  
 $-N(R_{18})C(O)-$ ,  $-N(R_{18})CON(R_{19})-$ ,  $-N(R_{18})C(O)O-$ ,  $-OC(O)N(R_{18})-$ ,  
 $-N(R_{18})SO_2-$ ,  $-SO_2N(R_{18})-$ ,  $-C(O)-O-$ ,  $-O-C(O)-$ ,  $-S-$ ,  $-S(O)-$ ,  $-S(O_2)-$ ,  
 $-N(R_{18})SO_2N(R_{19})-$ ,  $-N=N-$ , or  $-N(R_{18})-N(R_{19})-$ ;

wherein

$R_{18}$  and  $R_{19}$  independently comprise: -hydrogen, -alkyl, -aryl, -  
 arylene-alkyl, -alkylene-aryl, or -alkylene-arylene-alkyl;

V comprises



Z comprises hydrogen, -alkylene-aryl, -alkyl, -aryl, -heteroaryl, -heterocyclyl,  
 -cycloalkyl, -alkylene-heteroaryl, or -alkylene-cycloalkyl;

$R_{17}$  comprises  $-SO_3H$ ,  $-P(O)(OH)_2$ ,  $-P(O)(O-alkyl)(OH)$ ,  $-CO_2H$ ,  $-CO_2-alkyl$ ,  
 an acid isostere, hydrogen, -alkyl, -aryl, -arylene-alkyl, -alkylene-aryl,  
 acyloxy-alkylene-, or -alkylene-arylene-alkyl.

In another embodiment,  $Ar_2$  comprises a phenyl group or naphthyl group  
 optionally substituted 1 to 5 times, wherein the substituents independently comprise:

- a) -fluoro;
- b) -chloro;
- c) -bromo;
- d) -iodo;
- h)  $-Q-R_{17}$ ;
- i) -alkyl;
- j) -aryl;
- q) -arylene-alkyl;
- s)  $-Q-alkyl$ ; or
- t) -arylene- $Q-alkyl$ ;

wherein

Q comprises  $-\text{CH}_2-$ ,  $-\text{O}-$ ,  $-\text{C}(\text{O})-$ , or  $-\text{C}(\text{O})-\text{O}-$ , and

$\text{R}_{17}$  comprises -hydrogen, -alkyl, -aryl,  $-\text{CO}_2\text{H}$ , or an acid isostere.

5 In another embodiment,  $\text{Ar}_2$  comprises a phenyl group substituted 1 to 5 times, wherein the substituents independently comprise:

a) -fluoro;

b) -chloro;

c) -bromo;

10 d) -iodo;

e)  $-\text{Q}-\text{R}_{17}$ ;

f) -alkyl;

g) -phenyl;

h) -phenylene-alkyl;

15 i)  $-\text{Q}-\text{alkyl}$ ; or

j) -phenylene- $-\text{Q}-\text{alkyl}$ ;

wherein

Q comprises  $-\text{CH}_2-$ ,  $-\text{O}-$ ,  $-\text{C}(\text{O})-$ , or  $-\text{C}(\text{O})-\text{O}-$ , and

$\text{R}_{17}$  comprises -hydrogen, -alkyl, -phenyl, or  $-\text{CO}_2\text{H}$ .

20

$\text{L}_2$  comprises:  $-\text{CH}_2-$ ,  $-\text{O}-$ , alkylene, alkenylene, alkynylene, -K-alkylene-, -alkylene-K-, -alkylene-K-alkylene-, -alkenylene-K-alkylene-, -alkylene-K-alkenylene-, -arylene-K-alkylene-, alkylene-K-arylene, -heteroarylene-K-alkylene-, alkylene-K-heteroarylene, -arylene-K-, -K-arylene-, or -heteroarylene-K-, -K-heteroarylene,

25

wherein K comprises a direct bond,  $-\text{N}(\text{R}_{20})-$ ,  $-\text{C}(\text{O})-$ ,  $-\text{CON}(\text{R}_{20})-$ ,  $-\text{N}(\text{R}_{20})\text{C}(\text{O})-$ ,  $-\text{N}(\text{R}_{20})\text{CON}(\text{R}_{21})-$ ,  $-\text{N}(\text{R}_{20})\text{C}(\text{O})\text{O}-$ ,  $-\text{OC}(\text{O})\text{N}(\text{R}_{20})-$ ,  $-\text{N}(\text{R}_{20})\text{SO}_2-$ ,  $-\text{SO}_2\text{N}(\text{R}_{20})-$ ,  $-\text{C}(\text{O})-\text{O}-$ ,  $-\text{O}-\text{C}(\text{O})-$ ,  $-\text{S}-$ ,  $-\text{S}(\text{O})-$ ,  $-\text{S}(\text{O}_2)-$ ,  $-\text{N}(\text{R}_{20})\text{SO}_2\text{N}(\text{R}_{21})-$ ,  $-\text{N}=\text{N}-$ , or  $-\text{N}(\text{R}_{20})-\text{N}(\text{R}_{21})-$ ;  $-\text{N}(\text{R}_{20})-$ ,  $-\text{C}(\text{O})-$ ,  $-\text{CON}(\text{R}_{20})-$ ,  $-\text{N}(\text{R}_{20})\text{C}(\text{O})-$ ,  $-\text{N}(\text{R}_{20})\text{CON}(\text{R}_{21})-$ ,  $-\text{N}(\text{R}_{20})\text{C}(\text{O})\text{O}-$ ,  $-\text{OC}(\text{O})\text{N}(\text{R}_{20})-$ ,  $-\text{N}(\text{R}_{20})\text{SO}_2-$ ,  $-\text{SO}_2\text{N}(\text{R}_{20})-$ ,  $-\text{C}(\text{O})-\text{O}-$ ,  $-\text{O}-\text{C}(\text{O})-$ ,  $-\text{S}$ ,  $-\text{S}(\text{O})-$ ,  $-\text{S}(\text{O}_2)-$ ,  $-\text{N}(\text{R}_{20})\text{SO}_2\text{N}(\text{R}_{21})-$ ,  $-\text{N}=\text{N}-$ ,  $-\text{N}(\text{R}_{20})-\text{N}(\text{R}_{21})-$  or a direct bond, wherein  $\text{R}_{20}$  and  $\text{R}_{21}$  independently comprise: -hydrogen, -alkyl, -aryl, -arylene-alkyl, -alkylene-aryl, or -alkylene-arylene-alkyl.

30



In an embodiment, L<sub>2</sub> comprises -O-, -O-alkylene-, -alkylene-O, or a direct bond.  
In another embodiment, L<sub>2</sub> comprises -O-alkylene- or a direct bond.

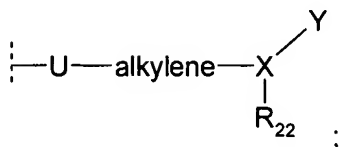
T comprises selected from the group consisting of: hydrogen, alkyl, cycloalkyl,  
5 heterocyclyl, aryl, heteroaryl, fused cycloalkylaryl, fused cycloalkylheteroaryl, fused  
heterocyclylaryl, or fused heterocyclylheteroaryl group optionally substituted 1 to 7 times.  
In an embodiment, T comprises an alkyl, -alkylene-aryl, or aryl group optionally  
substituted 1 to 7 times. In further embodiments, T comprises an aryl group optionally  
having 1 to 5 substituents, wherein the substituents independently comprise:

- |    |    |                                 |
|----|----|---------------------------------|
| 10 | a) | -fluoro;                        |
|    | b) | -chloro;                        |
|    | c) | -bromo;                         |
|    | d) | -iodo;                          |
|    | e) | -cyano;                         |
| 15 | f) | -nitro;                         |
|    | g) | -perfluoroalkyl;                |
|    | h) | -U-R <sub>22</sub> ;            |
|    | i) | -alkyl;                         |
|    | j) | -aryl;                          |
| 20 | k) | -heteroaryl;                    |
|    | l) | -heterocyclyl;                  |
|    | m) | -cycloalkyl;                    |
|    | n) | -L <sub>7</sub> -aryl;          |
|    | o) | -L <sub>7</sub> -arylene-aryl;  |
| 25 | p) | -L <sub>7</sub> -arylene-alkyl; |
|    | q) | -arylene-alkyl;                 |
|    | r) | -arylene-arylene-alkyl;         |
|    | s) | -U-alkyl;                       |
|    | t) | -U-aryl;                        |
| 30 | u) | -U-alkylene-aryl;               |
|    | v) | -U-arylene-alkyl;               |
|    | w) | -U-alkylene-arylene-aryl;       |
|    | x) | -U-arylene-arylene-aryl;        |
|    | y) | -U-alkylene-arylene-alkyl;      |

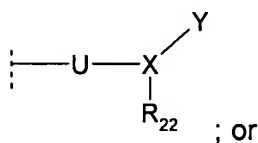
	z)	– L <sub>7</sub> -U-alkylene-aryl;
	aa)	-arylene-U-alkyl;
	bb)	– L <sub>7</sub> -U-aryl;
	cc)	– L <sub>7</sub> -U-heteroaryl;
5	dd)	– L <sub>7</sub> -U-cycloalkyl;
	ee)	- L <sub>7</sub> -U-heterocyclyl;
	ff)	- L <sub>7</sub> -U-arylene-alkyl;
	gg)	- L <sub>7</sub> -U-alkylene-arylene-alkyl;
	hh)	- L <sub>7</sub> -U-alkyl;
10	ii)	- L <sub>7</sub> -U-alkylene-aryl- R <sub>22</sub> ;
	jj)	- L <sub>7</sub> -U-alkylene-heteroaryl- R <sub>22</sub> ;
	kk)	-arylene-U-alkylene- R <sub>22</sub> ;
	ll)	-heteroarylene-U-alkylene- R <sub>22</sub> ;
	mm)	L <sub>7</sub> -U-aryl- R <sub>22</sub> ;
15	nn)	- L <sub>7</sub> -U-heteroarylene- R <sub>22</sub> ;
	oo)	- L <sub>7</sub> -U-heteroaryl- R <sub>22</sub> ;
	pp)	- L <sub>7</sub> -U-cycloalkyl- R <sub>22</sub> ;
	qq)	– L <sub>7</sub> -U-heterocyclyl- R <sub>22</sub> ;
	rr)	– L <sub>7</sub> -U-arylene-alkyl- R <sub>22</sub> ;
20	ss)	– L <sub>7</sub> -U-heteroarylene-alkyl- R <sub>22</sub> ;
	tt)	– L <sub>7</sub> -U-alkylene-arylene-alkyl- R <sub>22</sub> ;
	uu)	– L <sub>7</sub> -U-alkylene-heteroarylene-alkyl- R <sub>22</sub> ;
	vv)	– L <sub>7</sub> -Q-alkylene-cycloalkylene-alkyl-R <sub>22</sub> ;
	ww)	– L <sub>7</sub> -Q-alkylene-heterocyclylene-alkyl-R <sub>22</sub> ;
25	xx)	– L <sub>7</sub> -U-alkyl- R <sub>22</sub> ;
	yy)	– L <sub>7</sub> -U- R <sub>22</sub> ;
	zz)	-arylene-U- R <sub>22</sub> ;
	aaa)	-heteroarylene-U- R <sub>22</sub> ;
	bbb)	-heterocyclylene-U- R <sub>22</sub> ;
30	ccc)	-U-alkylene- R <sub>22</sub> ;
	ddd)	-U-arylene- R <sub>22</sub> ;
	eee)	-U-heteroarylene- R <sub>22</sub> ;
	fff)	-U-alkylene-arylene- R <sub>22</sub> ;
	ggg)	-U-alkylene-heteroarylene- R <sub>22</sub> ;

TTP 2002-08

- hhh) -U-heteroarylene-alkylene- R<sub>22</sub>;  
 iii) -U-arylene-alkylene- R<sub>22</sub>;  
 jjj) -U-cycloalkylene-alkylene- R<sub>22</sub>;  
 kkk) -U-heterocyclylene-alkylene- R<sub>22</sub>;  
 5 III) -U-alkylene-arylene-alkyl- R<sub>22</sub>;  
 mmm) -U-alkylene-heteroarylene-alkyl- R<sub>22</sub>;  
 nnn)



ooo)



10

ppp) -hydrogen;

wherein

L<sub>7</sub> comprises a direct bond, -alkylene, -alkenylene, or -alkynylene;

15

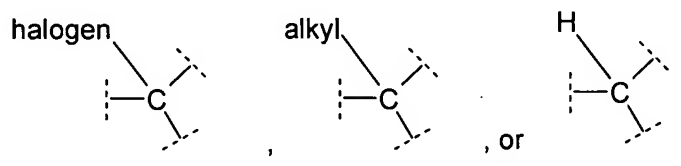
U comprises a direct bond, -CH<sub>2</sub>-, -O-, -N(R<sub>23</sub>)-, -C(O)-, -CON(R<sub>23</sub>)-, -N(R<sub>23</sub>)C(O)-, -N(R<sub>23</sub>)CON(R<sub>24</sub>)-, -N(R<sub>23</sub>)C(O)O-, -OC(O)N(R<sub>23</sub>)-, -N(R<sub>23</sub>)SO<sub>2</sub>-, -SO<sub>2</sub>N(R<sub>23</sub>)-, -C(O)-O-, -O-C(O)-, -S-, -S(O)-, -S(O<sub>2</sub>)-, -N(R<sub>23</sub>)SO<sub>2</sub>N(R<sub>24</sub>)-, -N=N-, or -N(R<sub>23</sub>)-N(R<sub>24</sub>)-;

wherein

20

R<sub>23</sub> and R<sub>24</sub> independently comprise: -hydrogen, -alkyl, -aryl, -arylene-alkyl, -alkylene-aryl, or -alkylene-arylene-alkyl;

X comprises



Y comprises hydrogen, -alkylene-aryl, -alkyl, -aryl, -heteroaryl, -heterocyclyl, -cycloalkyl, -alkylene-heteroaryl, or -alkylene-cycloalkyl;

25

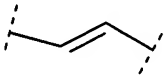
$R_{22}$  comprises  $-\text{SO}_3\text{H}$ ,  $-\text{P}(\text{O})(\text{OH})_2$ ,  $-\text{P}(\text{O})(\text{O-alkyl})(\text{OH})$ ,  $-\text{CO}_2\text{H}$ ,  $-\text{CO}_2\text{-alkyl}$ , an acid isostere,  $-\text{hydrogen}$ ,  $-\text{alkyl}$ ,  $-\text{aryl}$ ,  $-\text{arylene-alkyl}$ ,  $-\text{alkylene-aryl}$ ,  $\text{acyloxy-alkylene-}$ , or  $-\text{alkylene-arylene-alkyl}$ .

- 5 In another embodiment, T comprises an aryl group substituted by  $-\text{U-alkylene-}$   
 $R_{22}$ , wherein U comprises  $-\text{O-}$  or a direct bond, and  $R_{22}$  comprises  $-\text{CO}_2\text{H}$  or an acid  
 isostere.

In another embodiment, the present invention provides compounds of Formula (I)

10 wherein

a and b are equal to zero;

$L_1$  comprises  ;

$\text{Ar}_2$  comprises a phenylene group optionally substituted 1 time with a group  
 comprising:  $-\text{Q-alkyl}$ , wherein Q is  $-\text{O-}$ ;

- 15  $L_2$  comprises a direct bond,  $\text{O-alkylene}$ , or an  $\text{alkynylene}$ ; and

T comprises an aryl group substituted with at least one substituent comprising:

- a)  $-\text{U-}R_{22}$ ;  
 b)  $-\text{U-alkylene-arylene-}R_{22}$ ;  
 c)  $-\text{U-alkylene-}R_{22}$ ;  
 20 d)  $-\text{U-arylene-}R_{22}$ ;  
 e)  $-\text{U-arylene-}R_{22}$  wherein the arylene is substituted with at least one  
 of a halogen, methanesulfonylamino, or  
 trifluoromethanesulfonylamino group.  
 25 f)  $-\text{U-arylene}$  wherein the arylene is substituted with at least one  
 trifluoromethanesulfonylamino group;  
 g)  $-\text{R}_{22}$ ; or  
 h)  $-\text{halogen}$

wherein  $R_{22}$  is  $\text{CO}_2\text{H}$  or an acid isostere.

In another embodiment, the present invention provides compounds of Formula (I) wherein

5 a and b are equal to zero;

$R_1$  comprises hydrogen

W comprises  $-\text{N}(\text{R}_2)-$

wherein  $R_2$  comprises alkyl; and

10  $\text{Ar}_1$  comprises aryl substituted 2 times wherein the substituent groups comprise – chloro.

In another embodiment of the compound of Formula (I), wherein a and b are equal to 0, and  $R_1$ ,  $\text{Ar}_1$ , and W are as defined above, the groups T,  $\text{L}_2$ ,  $\text{Ar}_2$ , and  $\text{L}_1$  together comprise: E)-2-(4-methoxyphenyl)vinyl, (E)-2-(3-methoxyphenyl)vinyl, (E)-2-(2-methoxyphenyl)vinyl, (E)-2-(3,4-dimethoxyphenyl)vinyl, (E)-2-(2,3,4-trimethoxyphenyl)vinyl, (E)-2-(4-ethoxyphenyl)vinyl, (E)-2-phenylvinyl, (E)-2-(4-fluorophenyl)vinyl, (E)-2-(4-chlorophenyl)vinyl, (E)-2-(4-bromophenyl)vinyl, (E)-2-(1,1'-biphenyl-4-yl)vinyl, (E)-2-(1-naphthyl)vinyl, (E)-2-(2-naphthyl)vinyl, 9H-fluoren-9-ylidenemethyl, (E)-2-(4'-methoxy-1,1'-biphenyl-4-yl)vinyl, (E)-2-(3'-methoxy-1,1'-biphenyl-4-yl)vinyl, (E)-2-(4-hydroxyphenyl)vinyl, 2-(4-methoxyphenyl)ethyl, (E)-2-(4'-carboxymethyloxy-1,1'-biphenyl-4-yl)vinyl, (E)-2-(4'-(3-methoxycarbonyl-1-propyloxy)-1,1'-biphenyl-4-yl)vinyl, (E)-2-(4'-(3-carboxy-1-propyloxy)-1,1'-biphenyl-4-yl)vinyl, (E)-2-(4'-phenoxy-1,1'-biphenyl-4-yl)vinyl, or (E)-2-(4'-benzyloxy-1,1'-biphenyl-4-yl)vinyl.

25 In another embodiment of the compound of Formula (I),  $\text{Ar}_1$  comprises 2,4-dichlorophenyl.

In another embodiment of the compound of Formula (I), W comprises  $-\text{N}(\text{R}_2)-$ , wherein  $R_2$  comprises  $-\text{L}_3\text{-D-alkylene-arylene-G}$ , wherein  $\text{L}_3$  comprises a direct bond or alkylene, D is a direct bond, or  $-\text{O}-$ , and G comprises  $-\text{CN}$ ,  $-\text{SO}_3\text{H}$ ,  $-\text{P}(\text{O})(\text{OH})_2$ ,  $-\text{P}(\text{O})(\text{O-alkyl})(\text{OH})$ ,  $-\text{CO}_2\text{H}$ ,  $-\text{CO}_2\text{-alkyl}$ , or an acid isostere.

In another aspect, the present invention provides a pharmaceutically acceptable salt, solvate, or prodrug of compounds of Formula (I).

In the compounds of Formula (I), the various functional groups represented  
5 should be understood to have a point of attachment at the functional group having the hyphen. In other words, in the case of -alkylene-aryl, it should be understood that the point of attachment is the alkylene group; an example would be benzyl. In the case of a group such as -C(O)-NH- alkylene-aryl, the point of attachment is the carbonyl carbon.

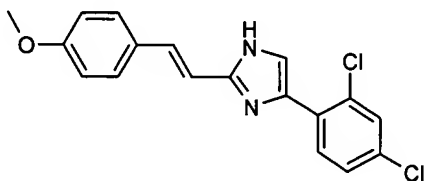
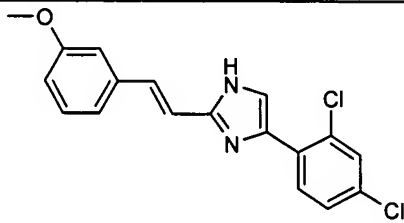
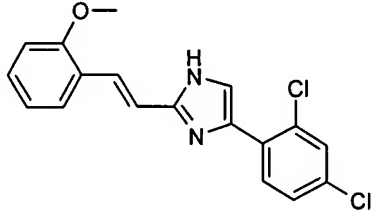
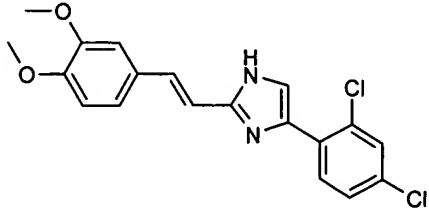
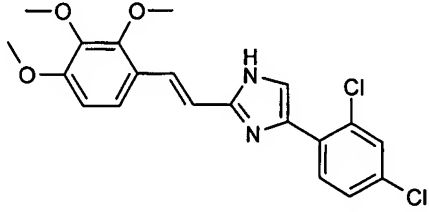
10 Also included within the scope of the invention are the individual enantiomers of the compounds represented by Formula (I) above as well as any wholly or partially racemic mixtures thereof. The present invention also covers the individual enantiomers of the compounds represented by formula above as mixtures with diastereoisomers thereof in which one or more stereocenters are inverted.

15 Compounds of the present invention which are currently preferred for their biological activity are listed by name below in Table 1.

The ability of compounds Formula (I) to potentially treat or inhibit disorders  
20 related to insulin resistance or hyperglycemia was established with representative compounds of Formula (I) listed in Table I using a standard primary/secondary assay test procedure that measures the inhibition of PTP-1B activity.

The compounds of this invention can be potentially useful in treating metabolic  
25 disorders related to insulin resistance or hyperglycemia, typically associated with obesity or glucose intolerance. The compounds of this invention may therefore be particularly useful in the treatment or inhibition of type II diabetes. The compounds of this invention are also potentially useful in modulating glucose levels in disorders such as type I diabetes.

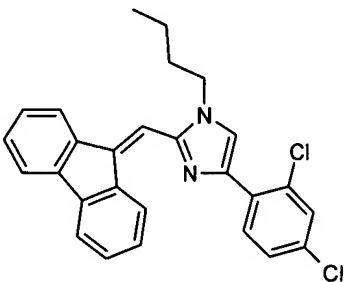
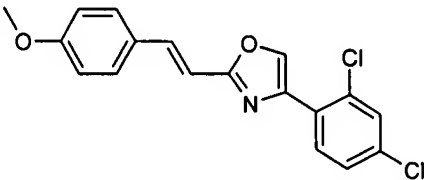
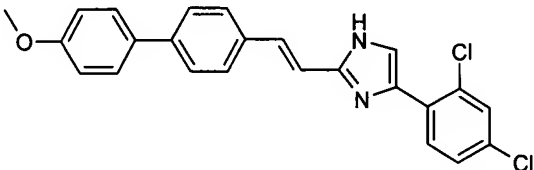
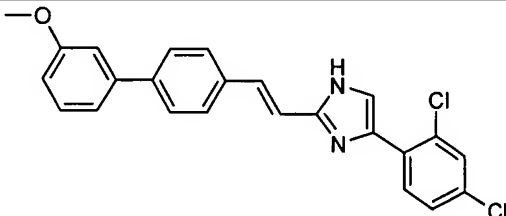
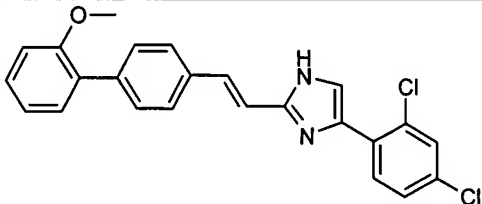
Table 1

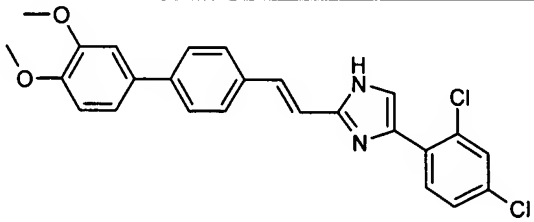
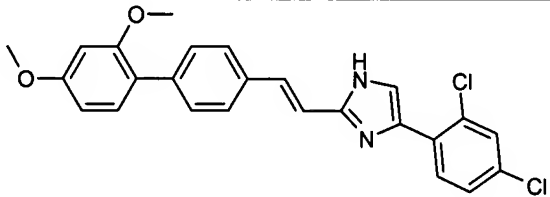
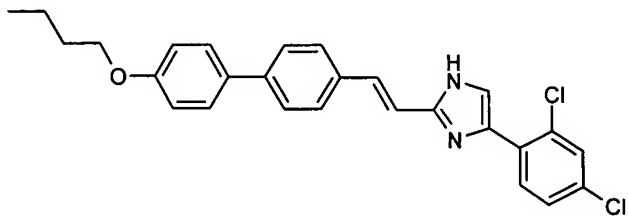
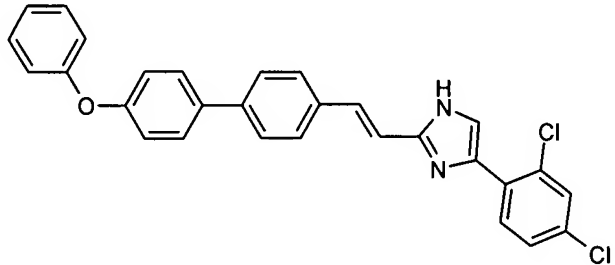
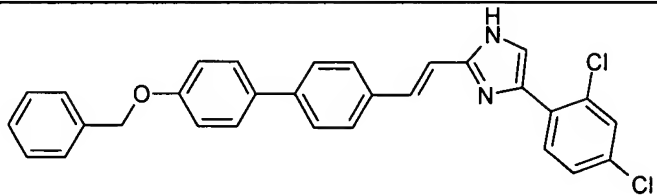
Ex.	Structure	Name
1		4-(2,4-dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-1H-imidazole
2		4-(2,4-dichloro-phenyl)-2-[2-(3-methoxy-phenyl)-(E)-vinyl]-1H-imidazole
3		4-(2,4-dichloro-phenyl)-2-[2-(2-methoxy-phenyl)-(E)-vinyl]-1H-imidazole
4		4-(2,4-dichloro-phenyl)-2-[2-(3,4-dimethoxy-phenyl)-(E)-vinyl]-1H-imidazole
5		4-(2,4-dichloro-phenyl)-2-[2-(2,3,4-trimethoxy-phenyl)-(E)-vinyl]-1H-imidazole

Ex.	Structure	Name
6		4-(2,4-dichloro-phenyl)-2-[2-(4-ethoxy-phenyl)-(E)-vinyl]-1H-imidazole
7		4-(2,4-dichloro-phenyl)-2-styryl-1H-imidazole
8		4-(2,4-dichloro-phenyl)-2-[2-(4-fluoro-phenyl)-(E)-vinyl]-1H-imidazole
9		2-[2-(4-chloro-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole
10		2-[2-(4-bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole
11		2-(2-biphenyl-4-yl-(E)-vinyl)-4-(2,4-dichloro-phenyl)-1H-imidazole

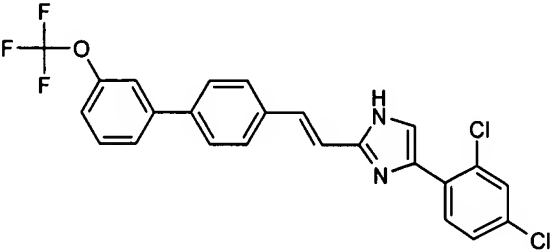
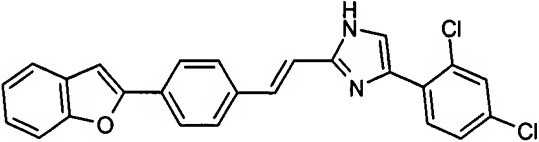
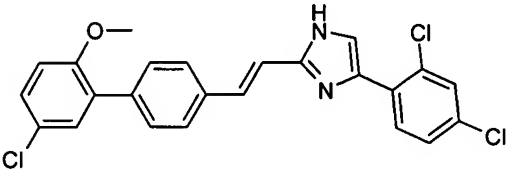
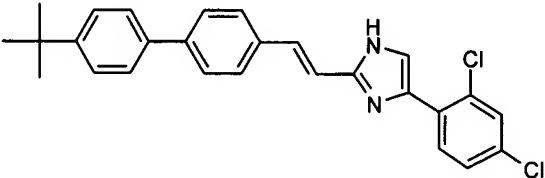
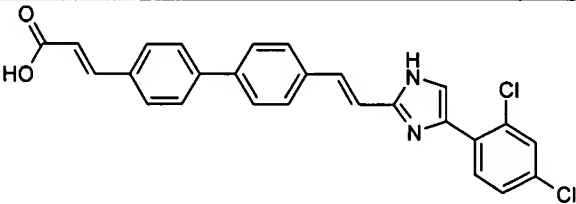
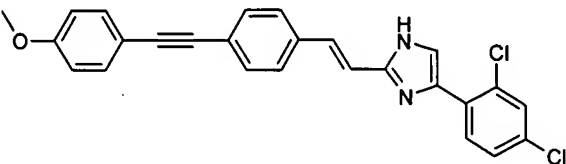


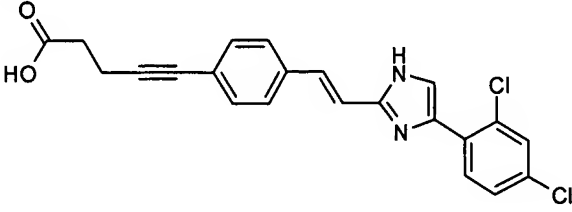
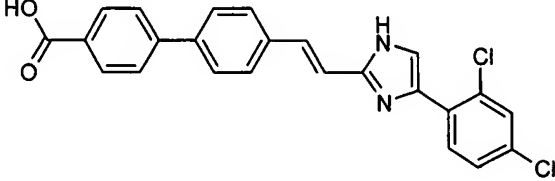
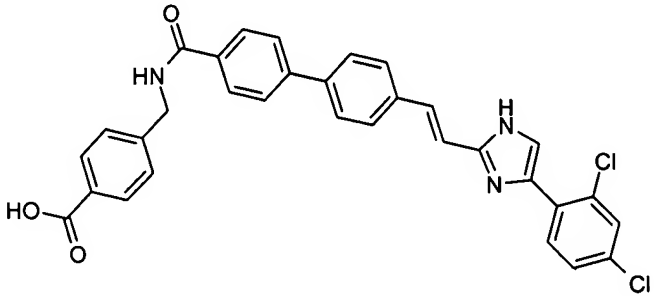
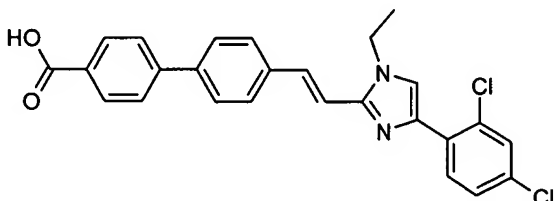
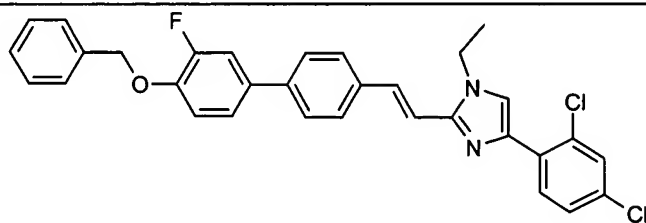
Ex.	Structure	Name
12		4-(2,4-dichloro-phenyl)-2-(2-naphthalen-1-yl-(E)-vinyl)-1H-imidazole
13		4-(2,4-dichloro-phenyl)-2-(2-naphthalen-2-yl-(E)-vinyl)-1H-imidazole
14		4-[4-(2,4-dichloro-phenyl)-1H-imidazol-2-yl]-5-phenyl-oxazole
15		2-[2-(4-benzyloxy-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole
16		4-(2,4-dichloro-phenyl)-2-fluoren-9-ylidenemethyl-1H-imidazole

Ex.	Structure	Name
17		1-butyl-4-(2,4-dichlorophenyl)-2-fluoren-9-ylidenemethyl-1H-imidazole
18		4-(2,4-dichlorophenyl)-2-[2-(4-methoxyphenyl)-(E)-vinyl]-oxazole
19		4-(2,4-dichlorophenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-1H-imidazole
20		4-(2,4-dichlorophenyl)-2-[2-(3'-methoxy-biphenyl-4-yl)-(E)-vinyl]-1H-imidazole
21		4-(2,4-dichlorophenyl)-2-[2-(2'-methoxy-biphenyl-4-yl)-(E)-vinyl]-1H-imidazole

Ex.	Structure	Name
22		4-(2,4-dichloro-phenyl)-2-[2-(3',4'-dimethoxy-biphenyl-4-yl)-(E)-vinyl]-1H-imidazole
23		4-(2,4-dichloro-phenyl)-2-[2-(2',4'-dimethoxy-biphenyl-4-yl)-(E)-vinyl]-1H-imidazole
24		2-[2-(4'-butoxy-biphenyl-4-yl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole
25		4-(2,4-dichloro-phenyl)-2-[2-(4'-phenoxy-biphenyl-4-yl)-(E)-vinyl]-1H-imidazole
26		2-[2-(4'-benzyloxy-biphenyl-4-yl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole

Ex.	Structure	Name
27		2-[2-(4'-benzyloxy-3'-fluoro-biphenyl-4-yl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole
28		4-(2,4-dichloro-phenyl)-2-{2-[4-(2,3-dihydrobenzo[1,4]dioxin-6-yl)-phenyl]-(E)-vinyl}-1H-imidazole
29		4-(2,4-dichloro-phenyl)-2-[2-(4'-methoxy-3',5'-dimethyl-biphenyl-4-yl)-(E)-vinyl]-1H-imidazole
30		4-(2,4-Dichloro-phenyl)-2-[2-(4'-ethoxy-biphenyl-4-yl)-(E)-vinyl]-1H-imidazole
31		4-(2,4-Dichloro-phenyl)-2-[2-(4'-trifluoromethoxy-biphenyl-4-yl)-(E)-vinyl]-1H-imidazole

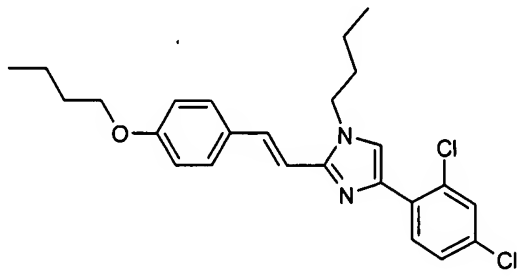
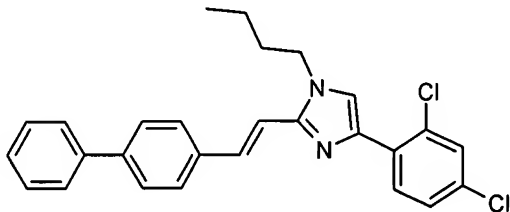
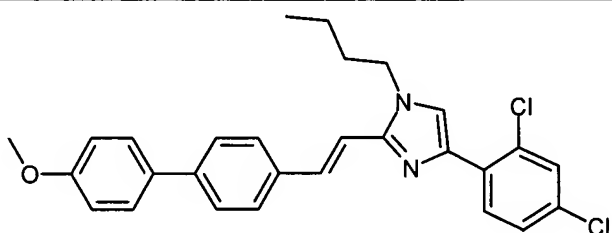
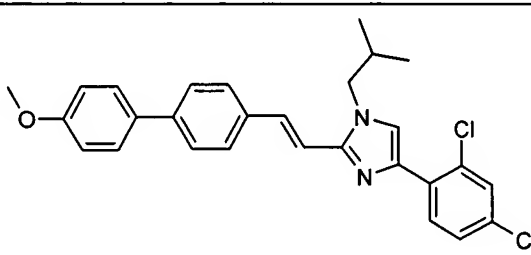
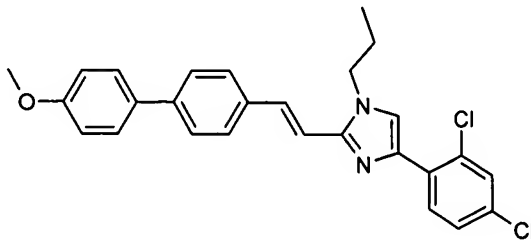
Ex.	Structure	Name
32		4-(2,4-dichloro-phenyl)-2-[2-(3'-trifluoromethoxy-biphenyl-4-yl)-(E)-vinyl]-1H-imidazole
33		2-[2-(4-benzofuran-2-yl-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole
34		2-[2-(5'-chloro-2'-methoxy-biphenyl-4-yl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole
35		2-[2-(4'-tert-butyl-biphenyl-4-yl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole
36		3-(4'-{2-[4-(2,4-dichloro-phenyl)-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yl)-acrylic acid
37		4-(2,4-dichloro-phenyl)-2-{2-[4-(4-methoxy-phenylethynyl)-phenyl]-(E)-vinyl}-1H-imidazole

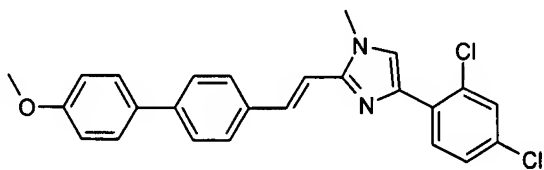
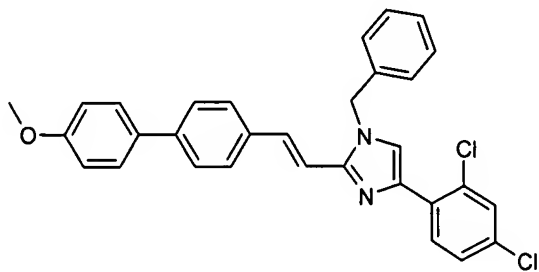
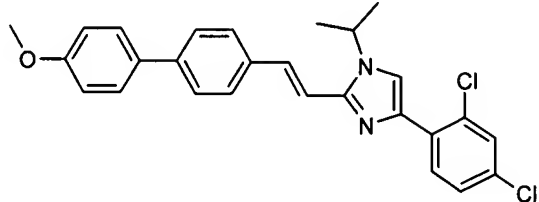
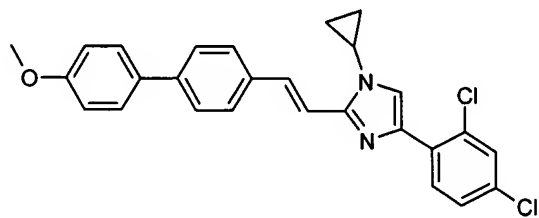
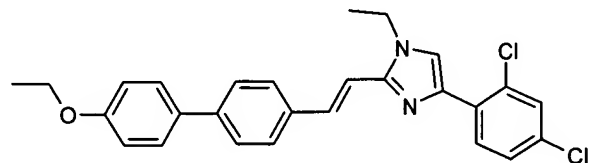
Ex.	Structure	Name
38		5-(4-{2-[4-(2,4-dichlorophenyl)-1H-imidazol-2-yl]-(E)-vinyl}-phenyl)-pent-4-ynoic acid
39		4'-{2-[4-(2,4-dichlorophenyl)-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-carboxylic acid
40		4-[[4'-(2-[4-(2,4-dichlorophenyl)-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-carbonyl]-amino]-methyl}-benzoic acid
41		4'-{2-[4-(2,4-Dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-carboxylic acid
42		2-[2-(4'-benzyloxy-3'-fluoro-biphenyl-4-yl)-(E)-vinyl]-4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazole

Ex.	Structure	Name
43		4-(4'-(2-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-3-fluoro-biphenyl-4-yloxymethyl)-benzoic acid
44		4-{2-[4-(2,4-Dichlorophenyl)-1H-imidazol-2-yl]-(E)-vinyl}-phenol
45		4-(2,4-dichlorophenyl)-2-[2-(4-methoxy-phenyl)-ethyl]-1H-imidazole
46		4-(2,4-dichlorophenyl)-1-ethyl-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-1H-imidazole
47		4-(4-{2-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-phenoxy-methyl)-benzoic acid

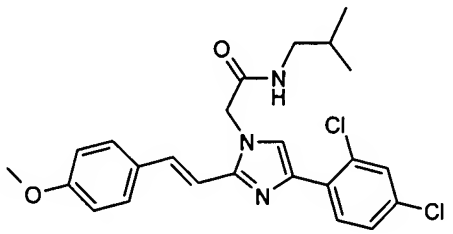
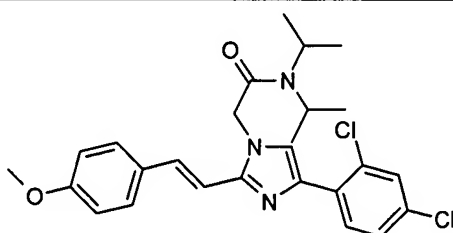
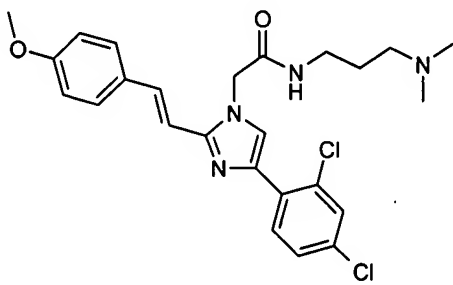
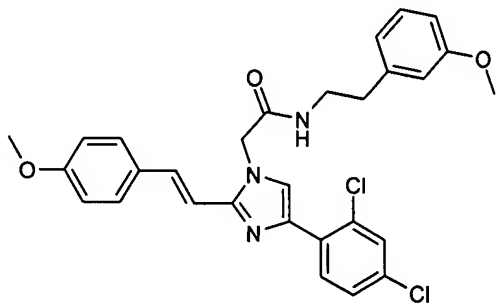
Ex.	Structure	Name
48		3-(4-{2-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-phenoxy)methyl)-benzoic acid
49		4-(4-{2-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-phenoxy)-butyric acid
50		6-(4-{2-[4-(2,4-Dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-phenoxy)-hexanoic acid
51		1-butyl-4-(2,4-dichlorophenyl)-2-[2-(4-methoxyphenyl)-(E)-vinyl]-1H-imidazole
52		4-(2,4-dichlorophenyl)-1-isobutyl-2-[2-(4-methoxyphenyl)-(E)-vinyl]-1H-imidazole

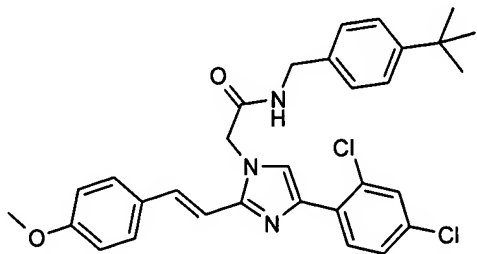
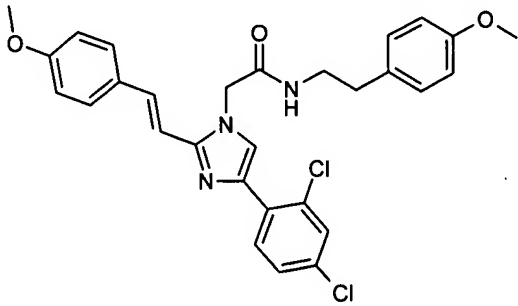
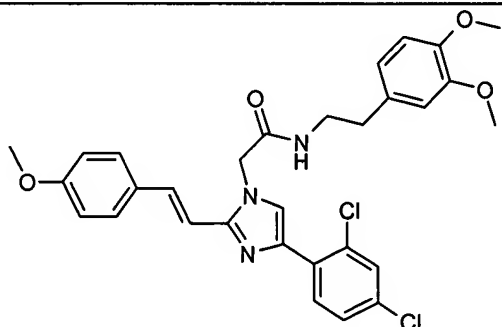
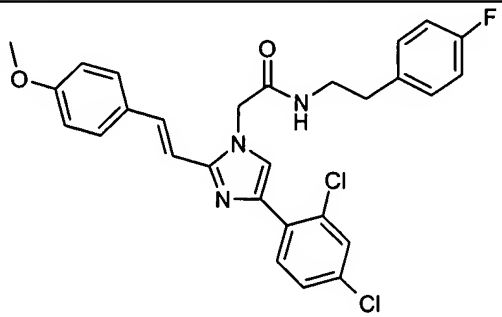


Ex.	Structure	Name
53		2-[2-(4-butoxy-phenyl)-(E)-vinyl]-1-butyl-4-(2,4-dichloro-phenyl)-1H-imidazole
54		2-(2-biphenyl-4-yl-(E)-vinyl)-1-butyl-4-(2,4-dichloro-phenyl)-1H-imidazole
55		1-butyl-4-(2,4-dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-1H-imidazole
56		4-(2,4-dichloro-phenyl)-1-isobutyl-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-1H-imidazole
57		4-(2,4-dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-1-propyl-1H-imidazole

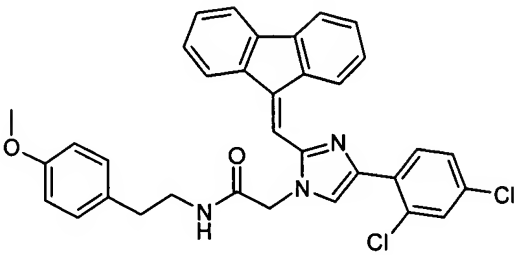
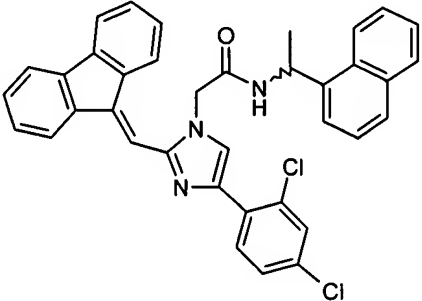
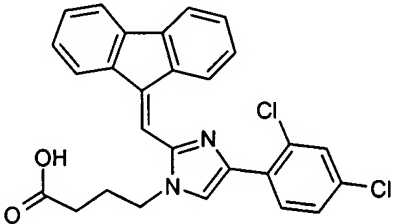
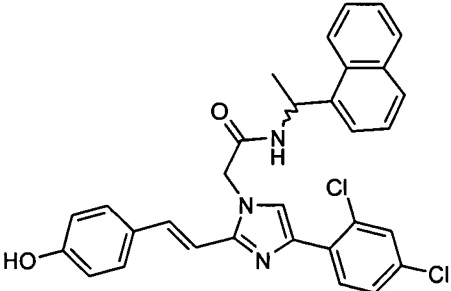
Ex.	Structure	Name
58		4-(2,4-dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-1-methyl-1H-imidazole
59		1-benzyl-4-(2,4-dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-1H-imidazole
60		4-(2,4-dichloro-phenyl)-1-isopropyl-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-1H-imidazole
61		1-cyclopropyl-4-(2,4-dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-1H-imidazole
62		4-(2,4-dichloro-phenyl)-2-[2-(4'-ethoxy-biphenyl-4-yl)-(E)-vinyl]-1-ethyl-1H-imidazole

Ex.	Structure	Name
63		{4-(2,4-dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-imidazol-1-yl}-acetic acid
64		2-{4-(2,4-dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-imidazol-1-yl}-N-(1-naphthalen-1-yl-ethyl)-acetamide
65		2-{4-(2,4-dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-imidazol-1-yl}-N-((S)-1-naphthalen-1-yl-ethyl)-acetamide
66		N-butyl-2-{4-(2,4-dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-imidazol-1-yl}-acetamide

Ex.	Structure	Name
67		2-{4-(2,4-dichloro-phenyl)- 2-[2-(4-methoxy-phenyl)- (E)-vinyl]-imidazol-1-yl}-N- isobutyl-acetamide
68		2-{4-(2,4-dichloro-phenyl)- 2-[2-(4-methoxy-phenyl)- (E)-vinyl]-imidazol-1-yl}- N,N-diisopropyl-acetamide
69		2-{4-(2,4-dichloro-phenyl)- 2-[2-(4-methoxy-phenyl)- (E)-vinyl]-imidazol-1-yl}-N- (3-dimethylamino-propyl)- acetamide
70		2-{4-(2,4-dichloro-phenyl)- 2-[2-(4-methoxy-phenyl)- (E)-vinyl]-imidazol-1-yl}-N- [2-(3-methoxy-phenyl)- ethyl]-acetamide

Ex.	Structure	Name
71		N-(4-tert-butyl-benzyl)-2-{4-(2,4-dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-imidazol-1-yl}-acetamide
72		2-{4-(2,4-dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-imidazol-1-yl}-N-[2-(4-methoxy-phenyl)-ethyl]-acetamide
73		2-{4-(2,4-dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-imidazol-1-yl}-N-[2-(3,4-dimethoxy-phenyl)-ethyl]-acetamid
74		2-{4-(2,4-dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-imidazol-1-yl}-N-[2-(4-fluoro-phenyl)-ethyl]-acetamide

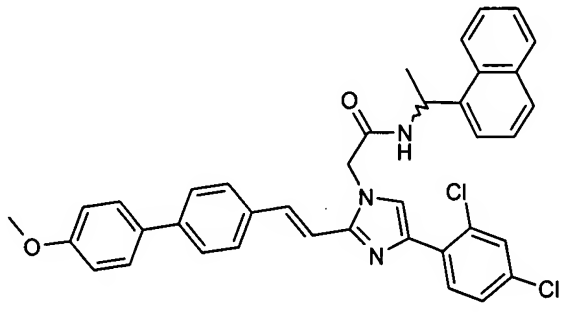
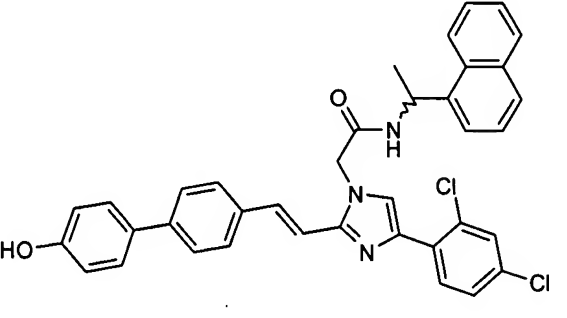
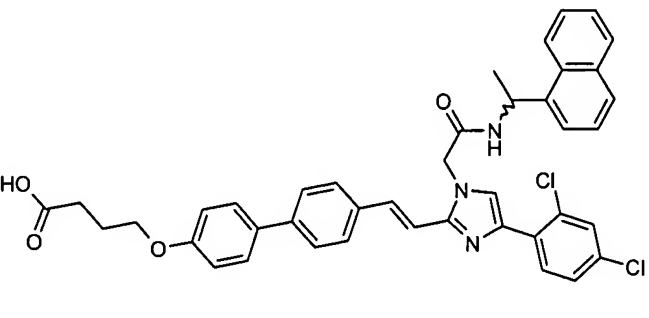
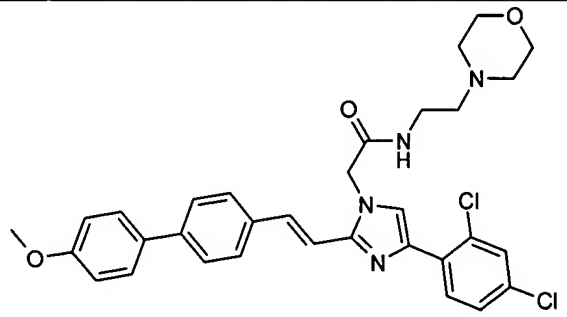
Ex.	Structure	Name
75		2-[4-(2,4-dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-imidazol-1-yl]-N-isoquinolin-5-yl-acetamide
76		2-[4-(2,4-dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-imidazol-1-yl]-N-pyridin-4-yl-acetamide
77		[4-(2,4-dichloro-phenyl)-2-fluoren-9-ylidenemethyl-imidazol-1-yl]-acetic acid
78		2-[4-(2,4-dichloro-phenyl)-2-fluoren-9-ylidenemethyl-imidazol-1-yl]-N-[2-(3-methoxy-phenyl)-ethyl]-acetamide

Ex.	Structure	Name
79		2-[4-(2,4-dichloro-phenyl)-2-fluoren-9-ylidenemethyl-imidazol-1-yl]-N-[2-(4-methoxy-phenyl)-ethyl]-acetamide
80		2-[4-(2,4-dichloro-phenyl)-2-fluoren-9-ylidenemethyl-imidazol-1-yl]-N-(1-naphthalen-1-yl-ethyl)-acetamide
81		4-[4-(2,4-dichloro-phenyl)-2-fluoren-9-ylidenemethyl-imidazol-1-yl]-butyric acid
82		2-[4-(2,4-dichloro-phenyl)-2-[2-(4-hydroxy-phenyl)-(E)-vinyl]-imidazol-1-yl]-N-(1-naphthalen-1-yl-ethyl)-acetamid

Ex.	Structure	Name
83		[4-(2-{4-(2,4-dichloro-phenyl)-1-[(1-naphthalen-1-yl-ethylcarbamoyl)-methyl]-1H-imidazol-2-yl}-(E)-vinyl)-phenoxy]-acetic acid
84		4-[4-(2-{4-(2,4-dichloro-phenyl)-1-[(1-naphthalen-1-yl-ethylcarbamoyl)-methyl]-1H-imidazol-2-yl}-(E)-vinyl)-phenoxy]-butyric acid
85		4-[4-(2-{4-(2,4-dichloro-phenyl)-1-[(1-naphthalen-1-yl-ethylcarbamoyl)-methyl]-1H-imidazol-2-yl}-(E)-vinyl)-phenoxy]methyl]-benzoic acid
86		3-[4-(2-{4-(2,4-dichloro-phenyl)-1-[(1-naphthalen-1-yl-ethylcarbamoyl)-methyl]-1H-imidazol-2-yl}-(E)-vinyl)-phenoxy]methyl]-benzoic acid



Ex.	Structure	Name
87		2-{4-(2,4-dichloro-phenyl)-2-[2-(4-ethoxy-phenyl)-(E)-vinyl]-imidazol-1-yl}-N-(1-naphthalen-1-yl-ethyl)-acetamide
88		4-(4'-{2-[1-benzyl-4-(2,4-dichloro-phenyl)-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-butyric acid
89		4-(4'-{2-[1-butyl-4-(2,4-dichloro-phenyl)-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-butyric acid
90		{4-(2,4-dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-yl}-acetic acid

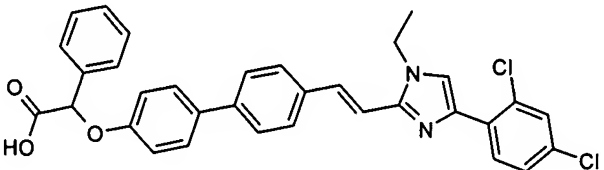
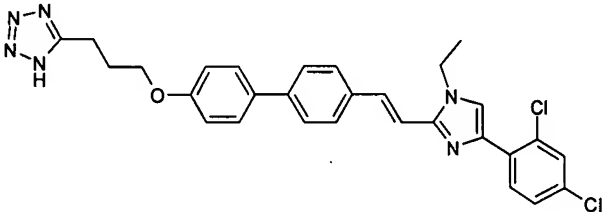
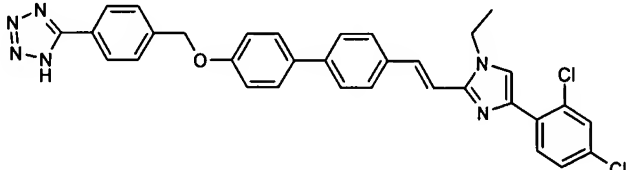
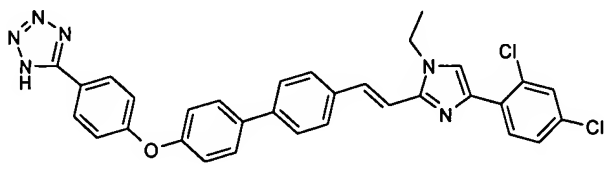
Ex.	Structure	Name
91		2-{4-(2,4-dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-yl}-N-(1-naphthalen-1-yl-ethyl)-acetamide
92		2-{4-(2,4-dichloro-phenyl)-2-[2-(4'-hydroxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-yl}-N-(1-naphthalen-1-yl-ethyl)-acetamide
93		4-[4'-(2-{4-(2,4-dichloro-phenyl)-1-[(1-naphthalen-1-yl-ethylcarbamoyl)-methyl]-1H-imidazol-2-yl)-(E)-vinyl}-biphenyl-4-yloxy]-butyric acid
94		2-{4-(2,4-dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-yl}-N-(2-morpholin-4-yl-ethyl)-acetamide

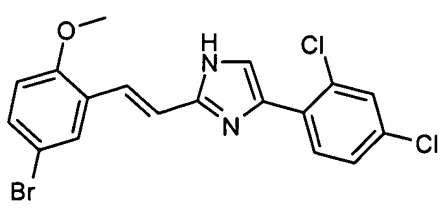
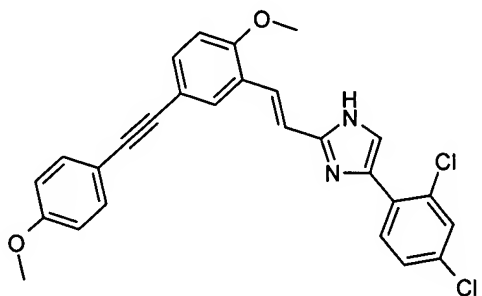
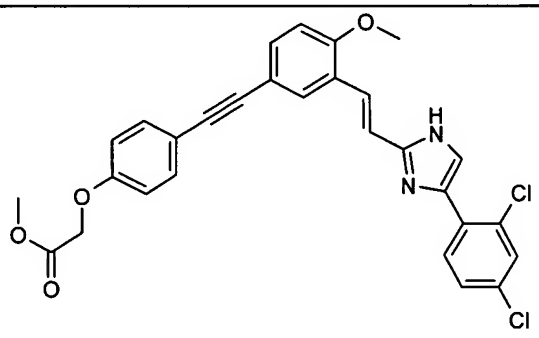
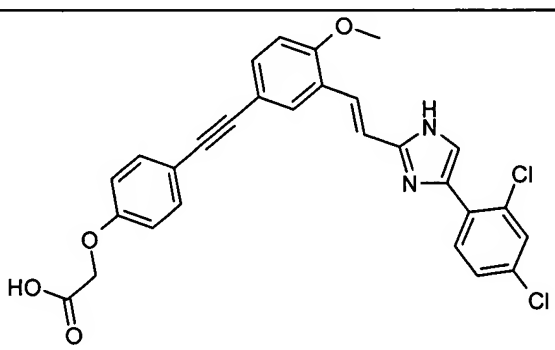
Ex.	Structure	Name
95		2-{4-(2,4-dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-yl}-N-(3,3-dimethyl-butyl)-acetamide
96		2-{4-(2,4-dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-yl}-N-[2-(4-methoxy-phenyl)-ethyl]-acetamide
97		4-(4'-{2-[4-(2,4-dichloro-phenyl)-1-methylcarbamoylmethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-butyric acid
98		4-(4'-{2-[4-(2,4-dichloro-phenyl)-1-ethylcarbamoylmethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-butyric acid

Ex.	Structure	Name
99		4-(4'-{2-[1-butylcarbamoylmethyl-4-(2,4-dichloro-phenyl)-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-butyric acid
100		4-[2-{2-[4'-(3-carboxy-propoxy)-biphenyl-4-yl]-(E)-vinyl}-4-(2,4-dichloro-phenyl)-imidazol-1-yl]-butyric acid
101		4-{4-(2,4-dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-yl}-butyric acid
102		4-{4-(2,4-dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-yl}-N-(1-naphthalen-1-yl-ethyl)-butyramide

Ex.	Structure	Name
103		4-{4-(2,4-dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-yl}-N-(3,3-dimethyl-butyl)-butyramide
104		2-[2-(4-bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazole
105		4-(2,4-dichloro-phenyl)-1-ethyl-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-1H-imidazole
106		4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-ol

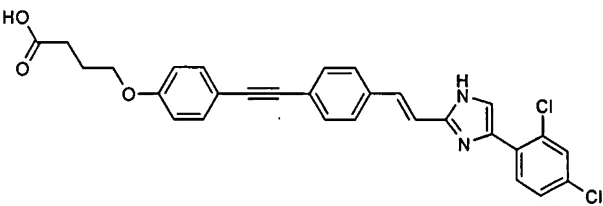
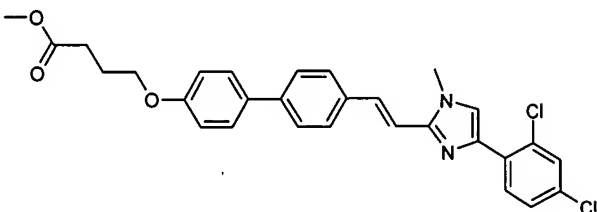
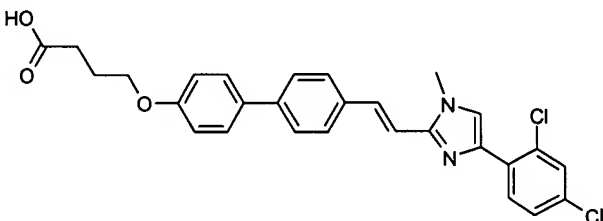
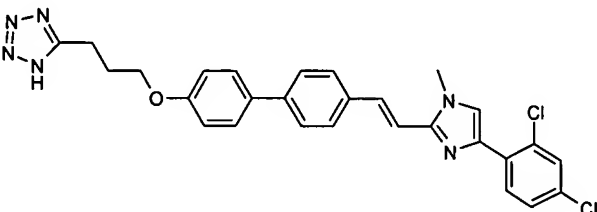
Ex.	Structure	Name
107		(4'-(2-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-acetic acid
108		2-(4'-(2-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-butyric acid
109		4-(4'-(2-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-butyric acid methyl ester
110		4-(4'-(2-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-butyric acid

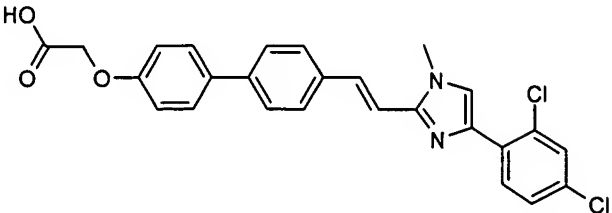
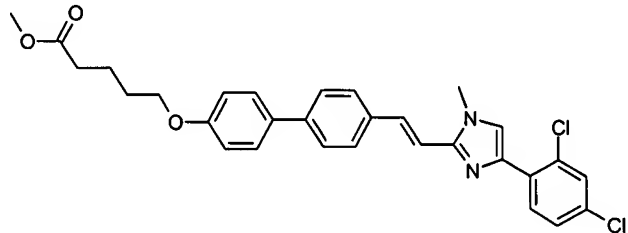
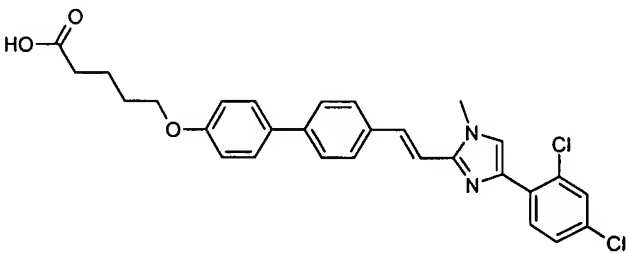
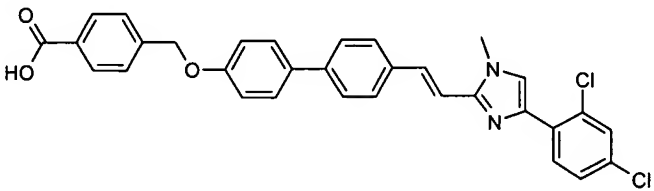
Ex.	Structure	Name
111		(4'-(2-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-phenyl-acetic acid
112		5-[3-(4'-(2-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-propyl]-1H-tetrazole
113		5-[4-(4'-(2-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxymethyl)-phenyl]-1H-tetrazole
114		5-[4-(4'-(2-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-phenyl]-1H-tetrazole

Ex.	Structure	Name
115		2-[2-(5-bromo-2-methoxy-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole
116		4-(2,4-dichloro-phenyl)-2-{2-[2-methoxy-5-(4-methoxy-phenylethynyl)-phenyl]-(E)-vinyl}-1H-imidazole
117		[4-(3-{2-[4-(2,4-dichloro-phenyl)-1H-imidazol-2-yl]-(E)-vinyl}-4-methoxy-phenylethynyl)-phenoxy]-acetic acid methyl ester
118		[4-(3-{2-[4-(2,4-dichloro-phenyl)-1H-imidazol-2-yl]-(E)-vinyl}-4-methoxy-phenyl-ethynyl)-phenoxy]-acetic acid

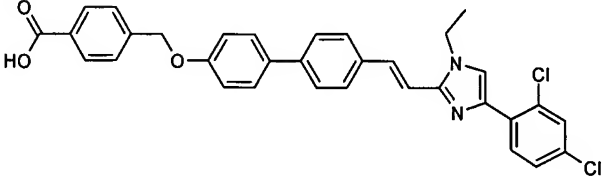
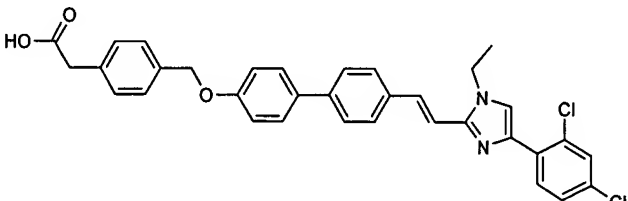
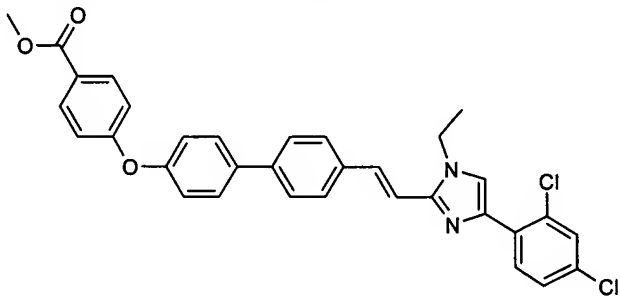
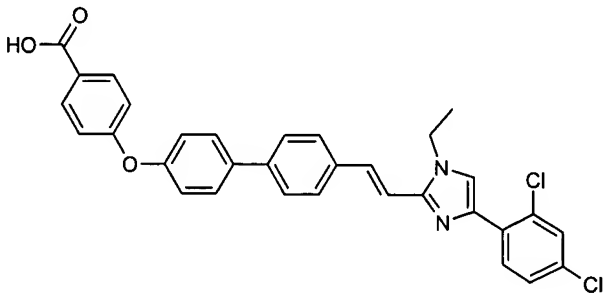


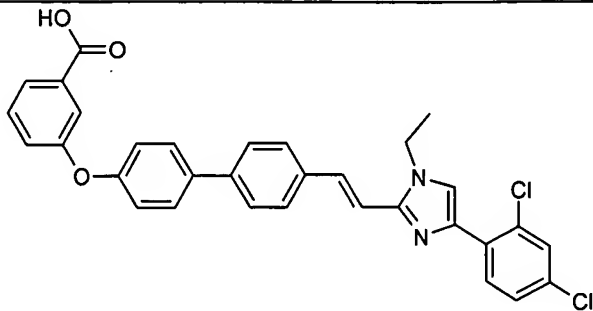
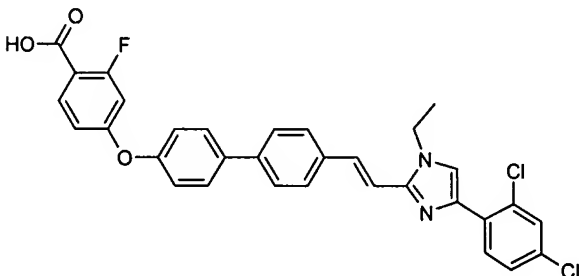
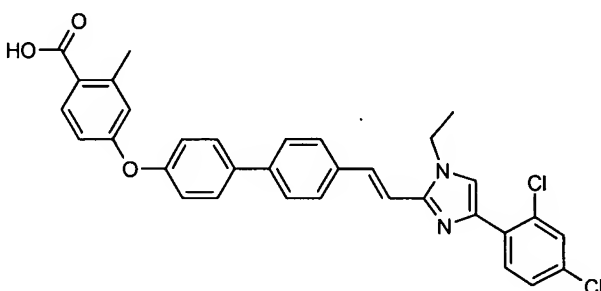
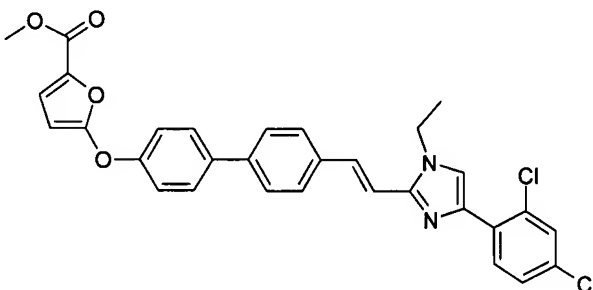
Ex.	Structure	Name
119		[3-(3-{2-[4-(2,4-dichlorophenyl)-1H-imidazol-2-yl]-(E)-vinyl]-4-methoxyphenylethynyl)-phenoxy]-acetic acid
120		[4-(3-{2-[4-(2,4-dichlorophenyl)-1-methyl-1H-imidazol-2-yl]-(E)-vinyl]-4-methoxyphenylethynyl)-phenoxy]-acetic acid
121		4-[4-(3-{2-[4-(2,4-dichlorophenyl)-1H-imidazol-2-yl]-(E)-vinyl]-4-methoxyphenylethynyl)-phenoxy]-butyric acid
122		4-[3-(4-{2-[4-(2,4-dichlorophenyl)-1H-imidazol-2-yl]-(E)-vinyl}-phenylethynyl)-phenoxy]-butyric acid

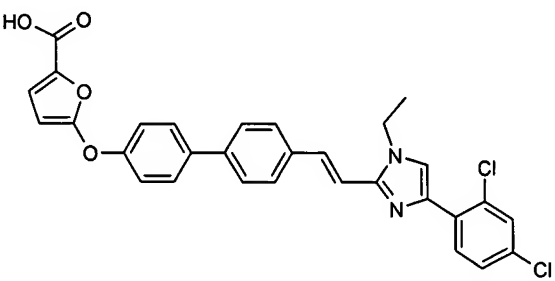
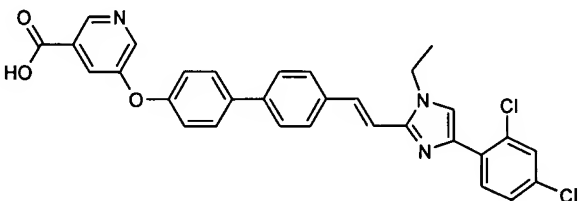
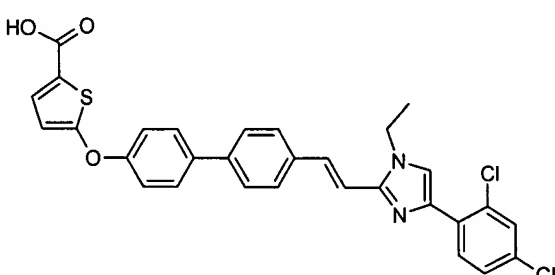
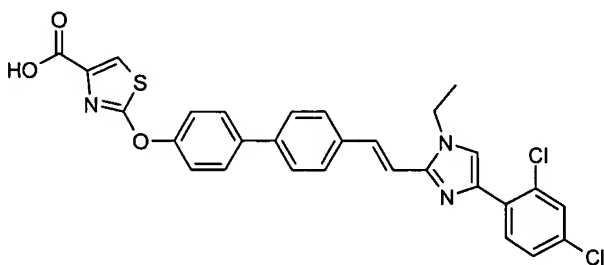
Ex.	Structure	Name
123		4-[4-(4-{2-[4-(2,4-dichlorophenyl)-1H-imidazol-2-yl]-(E)-vinyl}-phenylethynyl)-phenoxy]-butyric acid
124		4-(4'-(2-[4-(2,4-dichlorophenyl)-1-methyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-butyric acid methyl ester
125		4-(4'-(2-[4-(2,4-dichlorophenyl)-1-methyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-butyric acid
126		5-[3-(4'-(2-[4-(2,4-dichlorophenyl)-1-methyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-propyl]-1H-tetrazole

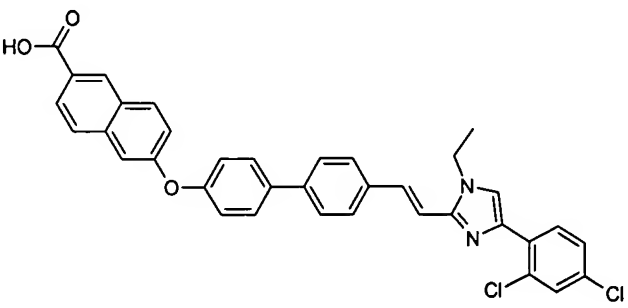
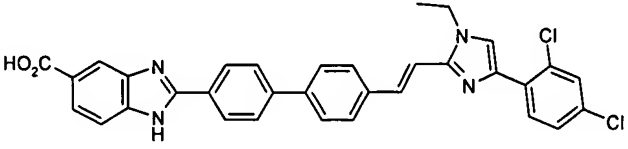
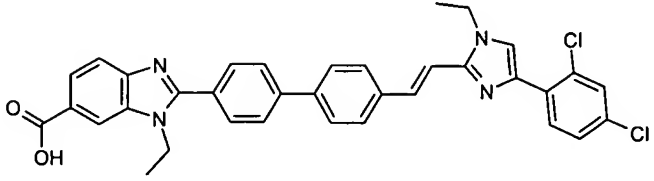
Ex.	Structure	Name
127		(4'-(2-[4-(2,4-dichlorophenyl)-1-methyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-acetic acid
128		5-(4'-(2-[4-(2,4-dichlorophenyl)-1-methyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-pentanoic acid methyl ester
129		5-(4'-(2-[4-(2,4-dichlorophenyl)-1-methyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-pentanoic acid
130		4-(4'-(2-[4-(2,4-dichlorophenyl)-1-methyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxymethyl)-benzoic acid

Ex.	Structure	Name
131		2-bromo-4-(4'-(2-[4-(2,4-dichloro-phenyl)-1-methyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-benzoic acid
132		4-(4'-(2-[4-(2,4-dichloro-phenyl)-1-(2,2,2-trifluoroethyl)-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-butyric acid
133		4-(4'-(2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-ylamino)-butyric acid
134		N-(4'-(2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yl)-succinamic acid

Ex.	Structure	Name
135		4-(4'-{2-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxymethyl)-benzoic acid
136		[4-(4'-{2-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxymethyl)-phenyl]-acetic acid
137		4-(4'-{2-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-benzoic acid methyl ester
138		4-(4'-{2-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-benzoic acid

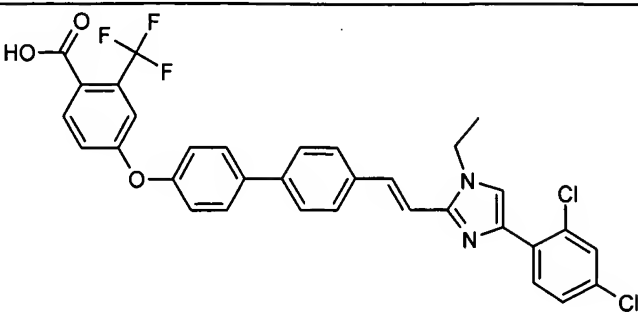
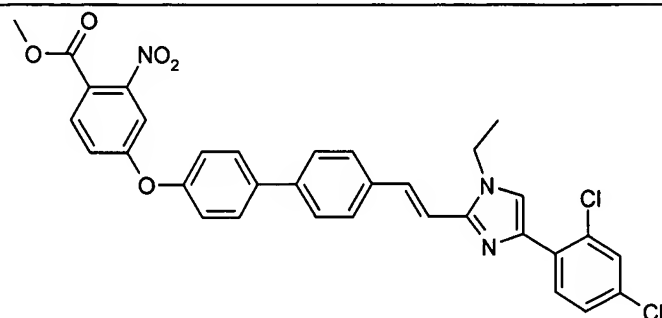
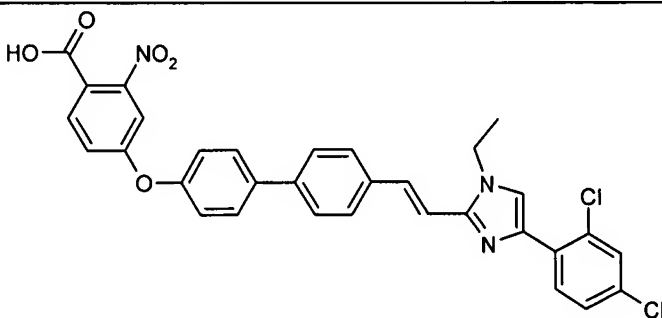
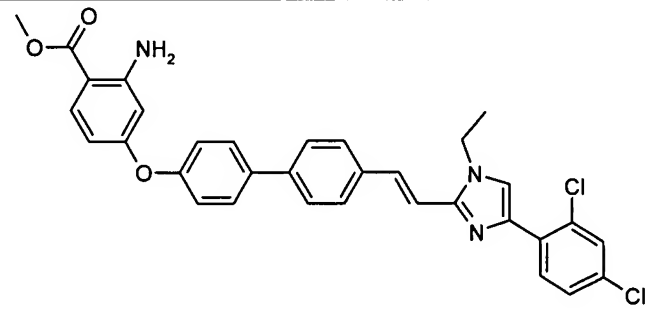
Ex.	Structure	Name
139		3-(4'-(2-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-benzoic acid
140		4-(4'-(2-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-2-fluorobenzoic acid
141		4-(4'-(2-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-2-methylbenzoic acid
142		5-(4'-(2-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-furan-2-carboxylic acid methyl ester

Ex.	Structure	Name
143		5-(4'-(2-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-furan-2-carboxylic acid
144		5-(4'-(2-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-nicotinic acid
145		5-(4'-(2-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-thiophene-2-carboxylic acid
146		2-(4'-(2-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-thiazole-4-carboxylic acid

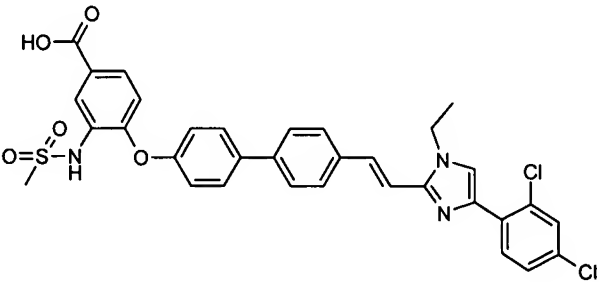
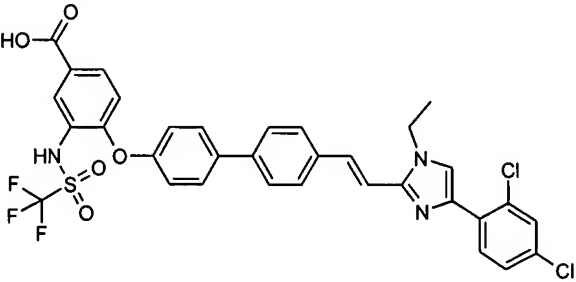
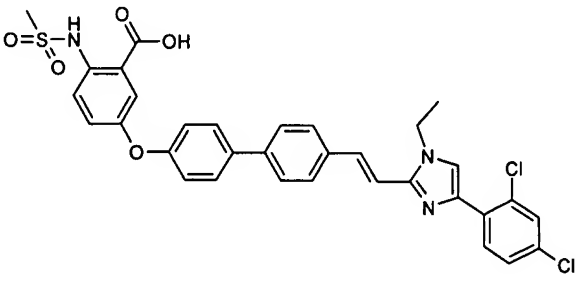
Ex.	Structure	Name
147		6-(4'-(2-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-naphthalene-2-carboxylic acid
148		2-(4'-(2-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yl)-1H-benzoimidazole-5-carboxylic acid
149		2-(4'-(2-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yl)-3-ethyl-3H-benzoimidazole-5-carboxylic acid



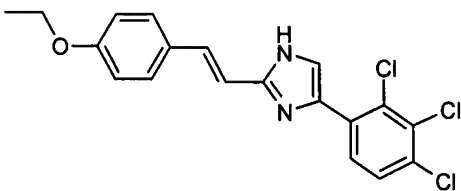
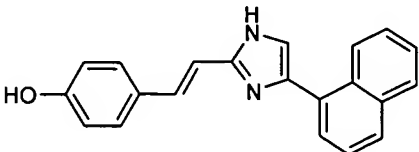
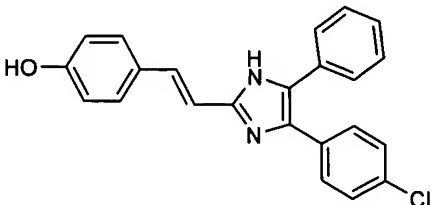
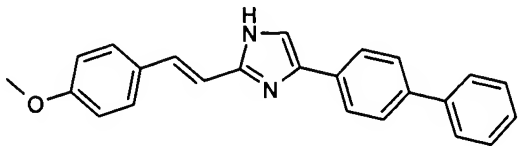
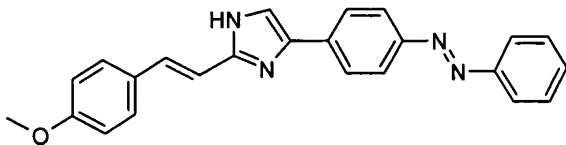
Ex.	Structure	Name
150		2-(4-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-phenyl)-1H-benzimidazole-5-carboxylic acid
151		2-bromo-4-(4'-(2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-benzoic acid methyl ester
152		2-bromo-4-(4'-(2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-benzoic acid
153		4-(4'-(2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-2-(trifluoromethyl)-benzoic acid methyl ester

Ex.	Structure	Name
154		4-(4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-2-trifluoromethyl-benzoic acid
155		4-(4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-2-nitro-benzoic acid methyl ester
156		4-(4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-2-nitro-benzoic acid
157		2-amino-4-(4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-benzoic acid methyl ester

Ex.	Structure	Name
158		2-amino-4-(4'-(2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-benzoic acid
159		4-(4'-(2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-2-methanesulfonylamino-benzoic acid methyl ester
160		4-(4'-(2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-2-methanesulfonylamino-benzoic acid
161		3-amino-4-(4'-(2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-benzoic acid

Ex.	Structure	Name
162		4-(4'-{2-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-3-methanesulfonylamino-benzoic acid
163		4-(4'-{2-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-3-trifluoromethanesulfonylamino-benzoic acid
164		5-(4'-{2-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-2-methanesulfonylamino-benzoic acid

Ex.	Structure	Name
165		5-(4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-2-trifluoromethane-sulfonylamino-benzoic acid
166		4-(4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-butyric acid 2,2-dimethyl-propionyloxymethyl ester
167		4-(4-chloro-phenyl)-2-[2-(4-ethoxy-phenyl)-(E)-vinyl]-1H-imidazole
168		4-(2,4-difluoro-phenyl)-2-[2-(4-ethoxy-phenyl)-(E)-vinyl]-1H-imidazole
169		2-[2-(4-ethoxy-phenyl)-(E)-vinyl]-4(4-methoxy-phenyl)-1H-imidazole

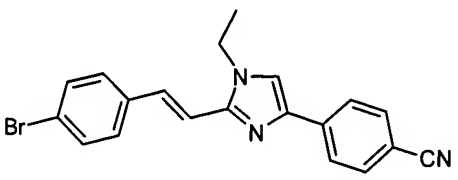
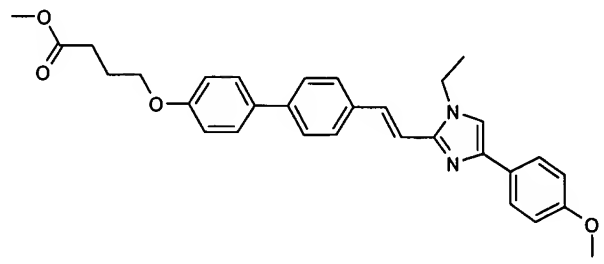
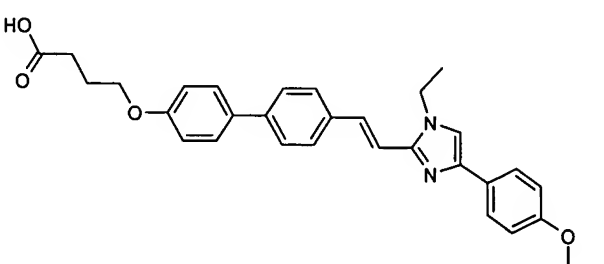
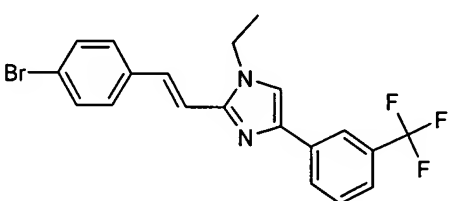
Ex.	Structure	Name
170		2-[2-(4-ethoxy-phenyl)-(E)-vinyl]-4-(2,3,4-trichloro-phenyl)-1H-imidazole
171		4-[2-(4-naphthalen-1yl-1H-imidazole-2-yl)-(E)-vinyl]-phenol
172		4-{2-[4-(4-chloro-phenyl)-5-phenyl-1H-imidazole-2-yl]-(E)-vinyl}-phenol
173		4-biphenyl-4-yl-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-1H-imidazole
174		(4-{2-[2-(4-methoxy-phenyl)-(E)-vinyl]-1H-imidazole-4-yl}-phenyl)-diazene

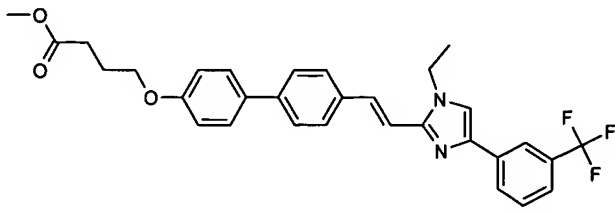
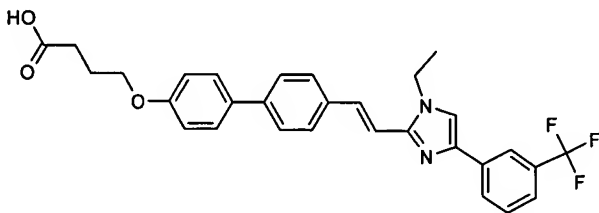
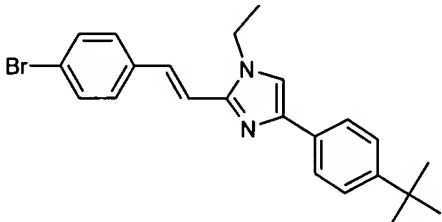
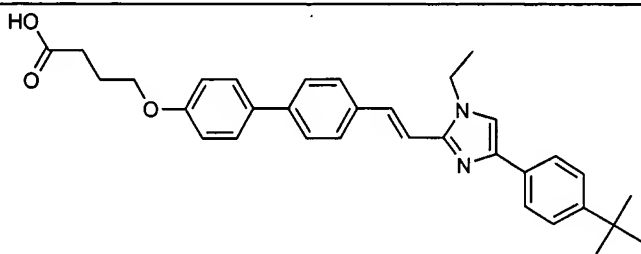
Ex.	Structure	Name
175		{4-biphenyl-4-yl-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-imidazole-1-yl}-acetic acid methyl ester
176		{4-biphenyl-4-yl-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-imidazole-1-yl}-acetic acid
177		4-(4-chloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-5-p-tolyl-1H-imidazole
178		2-[4-biphenyl-4-yl-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-imidazole-1-yl]-N-(1-naphthalen-1-yl-ethyl)-acetamide

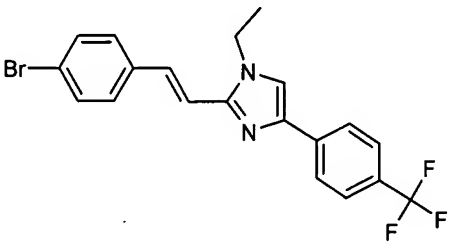
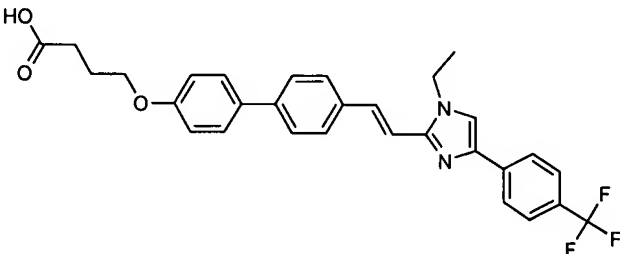
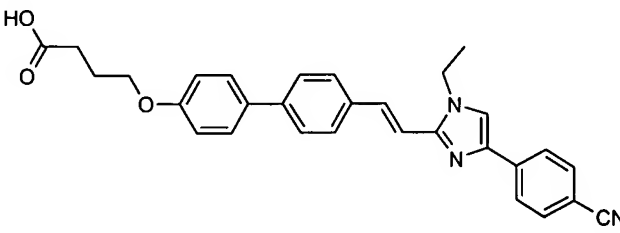
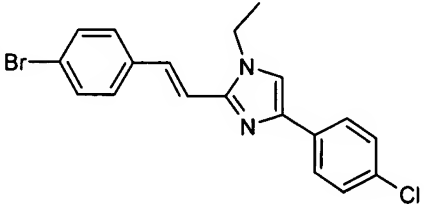
Ex.	Structure	Name
179		4-(4-bromo-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-1H-imidazole
180		diethyl-(4-{2-[2-(4-methoxy-phenyl)-(E)-vinyl]-1H-imidazol-4-yl}-phenyl)-amine
181		2-[2-(4-methoxy-phenyl)-(E)-vinyl]-4-pentafluorophenyl-1H-imidazole
182		4-(3',5'-dichloro-biphenyl-4-yl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-1H-imidazole
183		2-[2-(4-methoxy-phenyl)-(E)-vinyl]-4-(4-pentyl-phenyl)-1H-imidazole

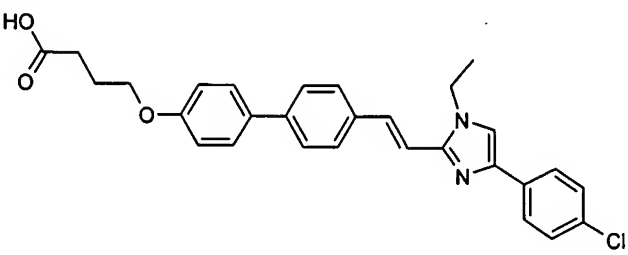
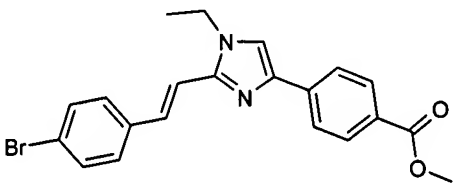
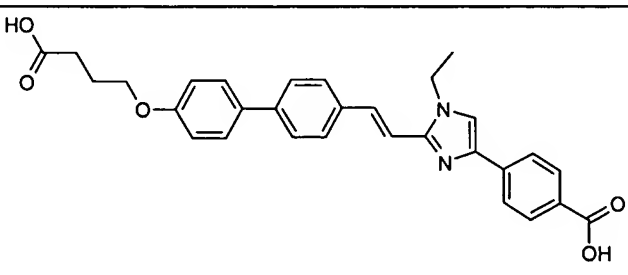
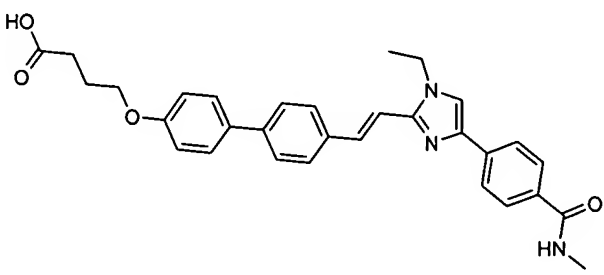


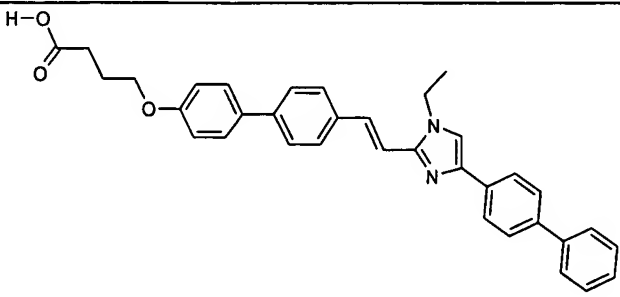
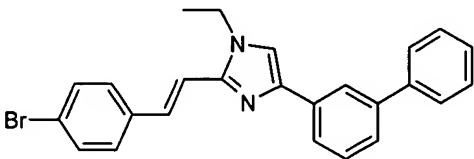
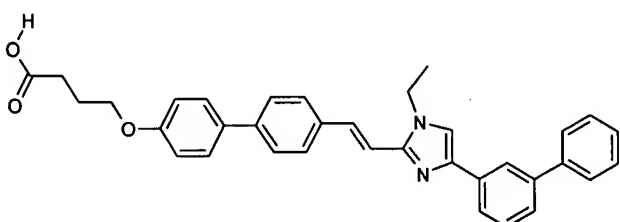
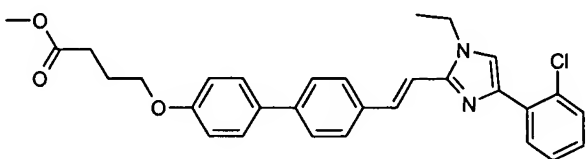
Ex.	Structure	Name
184		4-{2-[2-(4-methoxy-phenyl)-(E)-vinyl]-1H-imidazol-4-yl}-benzoic acid phenyl ester
185		4-(3',5'-dichloro-biphenyl-4-yl)-1-ethyl-2-[-2-(4-methoxy-phenyl)-(E)-vinyl]-1H-imidazole
186		4-(4-tert-butyl-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-1H-imidazole
187		2-[2-(4-methoxy-phenyl)-(E)-vinyl]-4-(3-trifluoromethyl-phenyl)-1H-imidazole
188		4-(2,3-dihydro-benzo[1,4]dioxin-5-yl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-1H-imidazole
189		2-[2-(4-bromo-phenyl)-(E)-vinyl]-1-ethyl-4-(4-methoxy-phenyl)-1H-imidazole

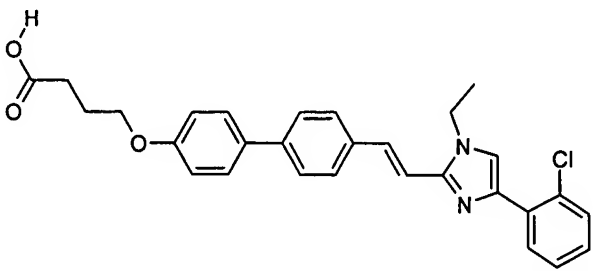
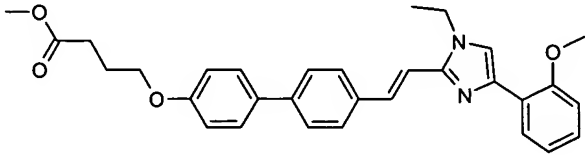
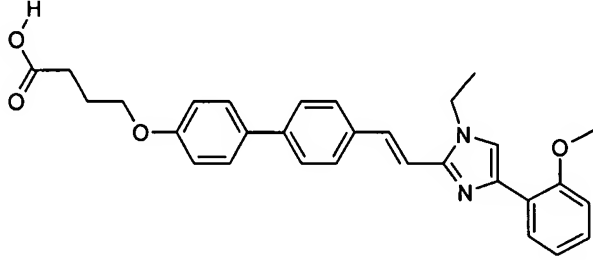
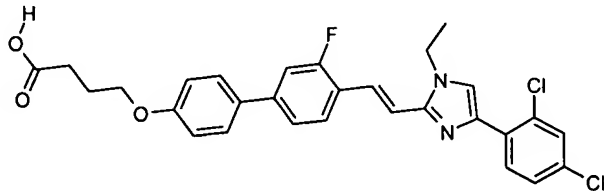
Ex.	Structure	Name
190		2-[2-(4-bromo-phenyl)-(E)-vinyl]-1-ethyl-4-(4-cyano-phenyl)-1H-imidazole
191		4-(4'-(2-[1-ethyl-4-(4-methoxy-phenyl)-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-butyric acid methyl ester
192		4-(4'-(2-[1-ethyl-4-(4-methoxy-phenyl)-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-butyric acid
193		2-[2-(4-bromo-phenyl)-(E)-vinyl]-1-ethyl-4-(3-trifluoromethyl-phenyl)-1H-imidazole

Ex.	Structure	Name
194		4-(4'-[2-[1-ethyl-4-(3-trifluoromethyl-phenyl)-1H-imidazol-2-yl]-(E)-vinyl]-biphenyl-4-yloxy)-butyric acid methyl ester
195		4-(4'-[2-[1-ethyl-4-(3-trifluoromethyl-phenyl)-1H-imidazol-2-yl]-(E)-vinyl]-biphenyl-4-yloxy)-butyric acid
196		2-[2-(4-bromo-phenyl)-(E)-vinyl]-4-(4-tert-butyl-phenyl)-1-ethyl-1H-imidazole
197		4-(4'-[2-[4-tert-butyl-phenyl]-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-butyric acid

Ex.	Structure	Name
198		2-[2-(4-bromo-phenyl)-(E)-vinyl]-1-ethyl-4-(4-trifluoromethyl-phenyl)-1H-imidazole
199		4-(-4'-{2-[1-ethyl-4-(4-trifluoromethyl-phenyl)-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-butyric acid
200		4-(-4'-{2-[1-ethyl-4-(4-cyano-phenyl)-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-butyric acid
201		2-[2-(4-bromo-phenyl)-(E)-vinyl]-1-ethyl-4-(4-chloro-phenyl)-1H-imidazole

Ex.	Structure	Name
202		4-(-4'-(2-[1-ethyl-4-(4-chloro-phenyl)-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-butyric acid
203		4-{2-[2-(4-bromo-phenyl)-(E)-vinyl]-1-ethyl-1H-imidazol-4-yl}-benzoic acid methyl ester
204		4-(1-ethyl-2-{2-[4'-(3-methoxycarbonyl-propoxy)-biphenyl-4-yl]-1H-imidazol-4-yl}-benzoic acid
205		4-(4'-(2-[1-ethyl-4-(4-methylcarbamoyl-phenyl)-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-butyric acid

Ex.	Structure	Name
206		4-{4'-[2-(4-biphenyl-4-yl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl]-biphenyl-4-yloxy}-butyric acid
207		4-biphenyl-3-yl-2-[2-(4-bromo-phenyl)-(E)-vinyl]-1-ethyl-1H-imidazole
208		4-{4'-[2-(4-biphenyl-3-yl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl]-biphenyl-4-yloxy}-butyric acid
209		4-(4'-[2-[4-(2-chloro-phenyl)-1-ethyl-1H-imidazole-2-yl]-(E)-vinyl]-biphenyl-4-yloxy)-butyric acid methyl ester

Ex.	Structure	Name
210		4-(4'-(2-[4-(2-chlorophenyl)-1-ethyl-1H-imidazole-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-butyric acid
211		4-(4'-(2-[4-(2-methoxyphenyl)-1-ethyl-1H-imidazole-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-butyric acid methyl ester
212		4-(4'-(2-[4-(2-methoxyphenyl)-1-ethyl-1H-imidazole-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-butyric acid
213		4-(4'-(2-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-3'-fluoro-biphenyl-4-yloxy)-butyric acid

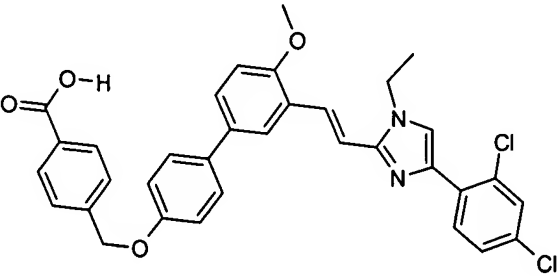
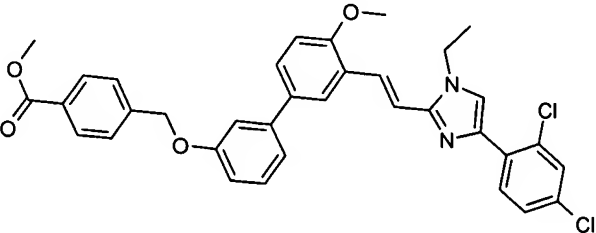
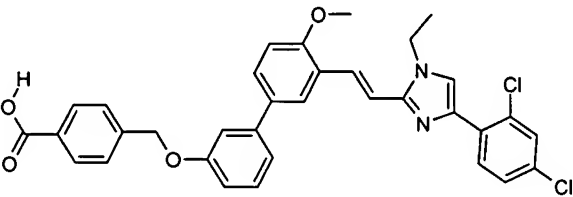
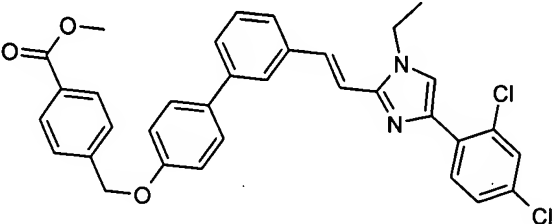
Ex.	Structure	Name
214		4-(4'-{2-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-3'-fluoro-biphenyl-3-yloxy)-butyric acid methyl ester
215		4-(4'-{2-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-3'-fluoro-biphenyl-3-yloxy)-butyric acid
216		4-(3'-{2-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-3-yloxy)-butyric acid methyl ester
217		4-(3'-{2-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-4-methoxy-biphenyl-4-yloxy)-butyric acid methyl ester

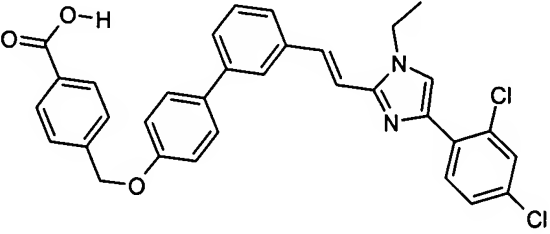
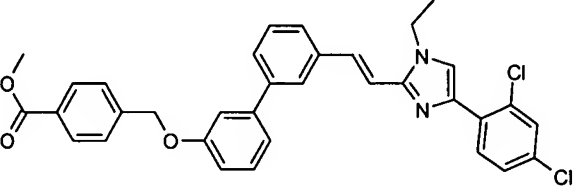
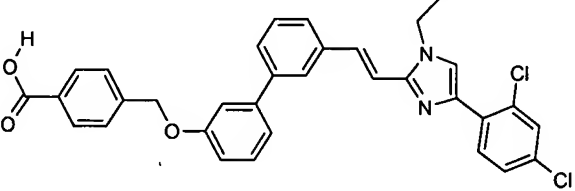
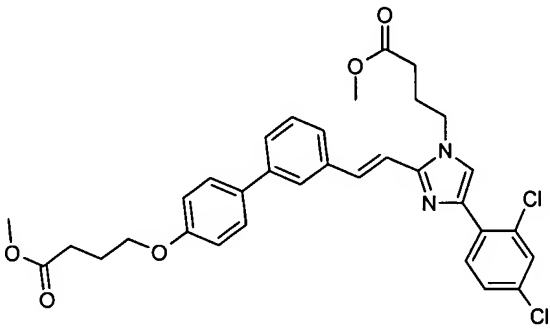


Ex.	Structure	Name
218		4-(3'-(2-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-4-methoxy-biphenyl-4-yloxy)-butyric acid
219		4-(3'-(2-[4-(2,4-Dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-4'-methoxy-biphenyl-3-yloxy)-butyric acid methyl ester
220		4-(3'-(2-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-4'-methoxy-biphenyl-3-yloxy)-butyric acid
221		4-(3'-(2-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-4'-fluoro-biphenyl-4-yloxy)-butyric acid methyl ester

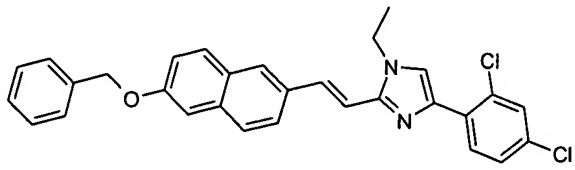
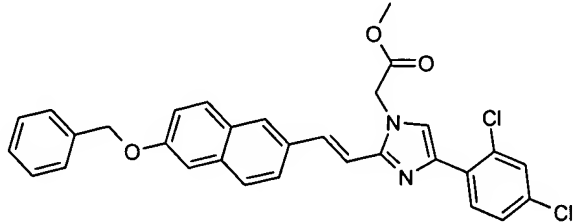
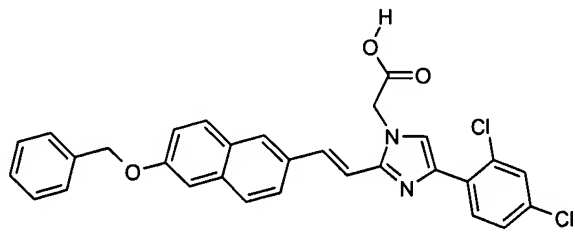
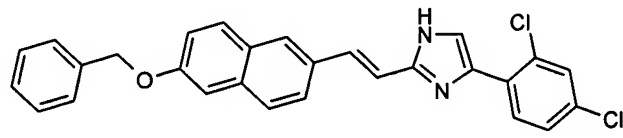
Ex.	Structure	Name
222		4-(3'-{2-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-4'-fluoro-biphenyl-4-yloxy)-butyric acid
223		4-(4'-{2-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-3'-fluoro biphenyl-4-yloxymethyl)-benzoic acid methyl ester
224		4-(4'-{2-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-3'-fluoro biphenyl-4-yloxymethyl)-benzoic acid
225		4-(4'-{2-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-3'-fluoro biphenyl-3-yloxymethyl)-benzoic acid methyl ester

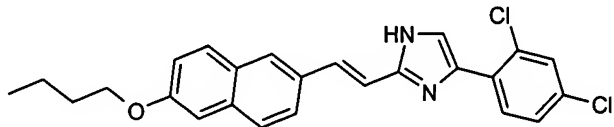
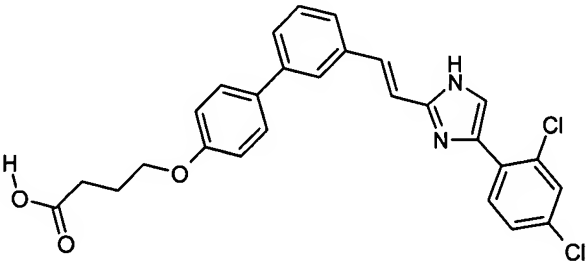
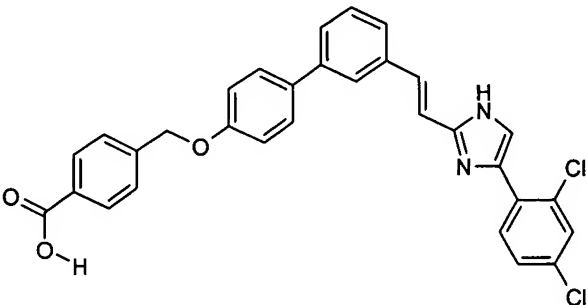
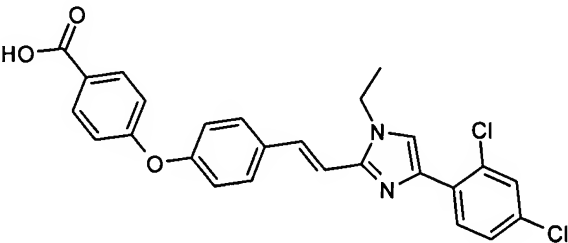
Ex.	Structure	Name
226		4-(4'-(2-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-3'-fluorobiphenyl-3-yloxymethyl)-benzoic acid
227		4-(3'-(2-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-4'-fluorobiphenyl-4-yloxymethyl)-benzoic acid methyl ester
228		4-(3'-(2-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-4'-fluorobiphenyl-4-yloxymethyl)-benzoic acid
229		4-(3'-(2-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-4'-methoxybiphenyl-4-yloxymethyl)-benzoic acid methyl ester

Ex.	Structure	Name
230		4-(3'-(2-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-4'-methoxy-biphenyl-4-yloxymethyl)-benzoic acid
231		4-(3'-(2-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-4'-methoxy-biphenyl-3-yloxymethyl)-benzoic acid methyl ester
232		4-(3'-(2-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-4'-methoxy-biphenyl-3-yloxymethyl)-benzoic acid
233		4-(3'-(2-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxymethyl)-benzoic acid methyl ester

Ex.	Structure	Name
234		4-(3'-(2-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxymethyl)-benzoic acid
235		4-(3'-(2-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-3-yloxymethyl)-benzoic acid methyl ester
236		4-(3'-(2-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-3-yloxymethyl)-benzoic acid
237		4-(4-(2,4-dichlorophenyl)-2-{2-[4'-(3-methoxycarbonyl-propoxy)-biphenyl-3yl]-(E)-vinyl}-imidazol-1-yl)-butyric acid methyl ester

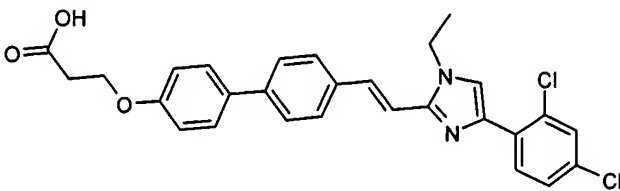
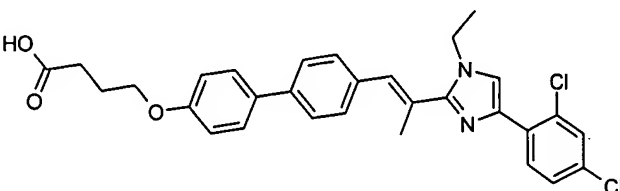
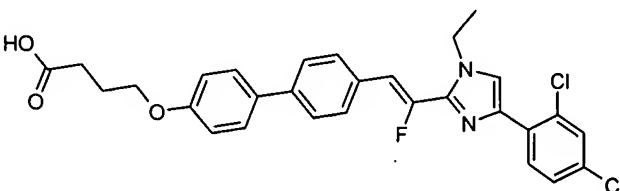
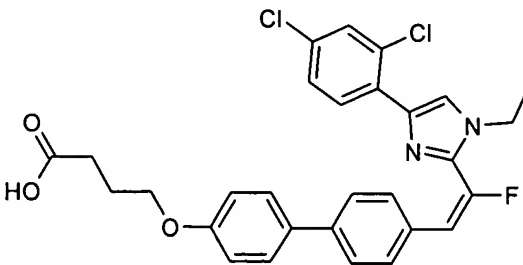
Ex.	Structure	Name
238		4-[2-{2-[4'-(3-carboxypropoxy)-biphenyl-3-yl]-(E)-vinyl]-4-(2,4-dichlorophenyl)-imidazol-1-yl]-butyric acid
239		4-(3'-(2-[4-(2,4-dichlorophenyl)-1-methoxycarbonylmethyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-butyric acid methyl ester
240		4-(3'-(2-[4-(2,4-dichlorophenyl)-1-methoxycarbonylmethyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-butyric acid
241		4-(6-{2-[4-(2,4-Dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-naphthalen-2-yloxy)-butyric acid

Ex.	Structure	Name
242		2-[2-(6-benzyloxy-naphthalen-2-yl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazole
243		2-[2-(6-benzyloxy-naphthalen-2-yl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-imidazol-1-yl]-acetic acid methyl ester
244		2-[2-(6-benzyloxy-naphthalen-2-yl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-imidazol-1-yl]-acetic acid methyl ester
245		2-[2-(6-benzyloxy-naphthalen-2-yl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole

Ex.	Structure	Name
246		2-[2-(6-butoxy-naphthalen-2-yl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole
247		4-(3-{2-[4-(2,4-dichloro-phenyl)-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-butyric acid
248		4-(3-{2-[4-(2,4-dichloro-phenyl)-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxymethyl)-benzoic acid
249		4-(4-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-phenoxy)-benzoic acid



Ex.	Structure	Name
250		7-(4'-{2-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-heptanoic acid
251		4-(4'-{2-[4-(2,4-dichlorophenyl)-1-(3-methyl-butyl)-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-butyric acid
252		5-(4'-{2-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-pentanoic acid
253		6-(4'-{2-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-hexanoic acid

Ex.	Structure	Name
254		3-(4'-{2-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-propionic acid
255		4-(4'-{2-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-propenyl}-biphenyl-4-yloxy)-butyric acid
256		4-(4'-{2-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-(Z)-2-fluorovinyl}-biphenyl-4-yloxy)-butyric acid
257		4-(4'-{2-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-2-fluorovinyl}-biphenyl-4-yloxy)-butyric acid

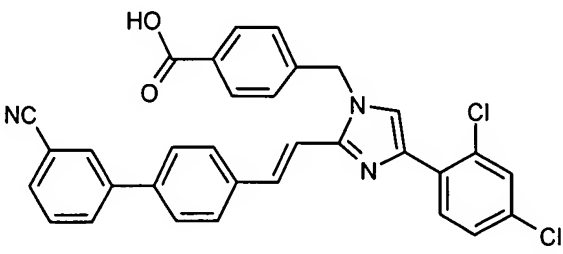
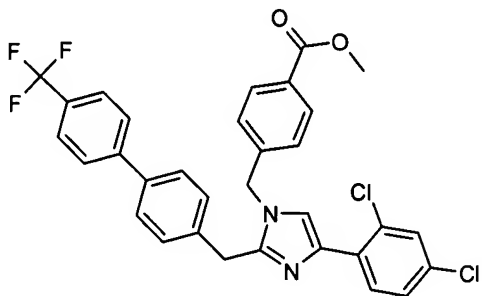
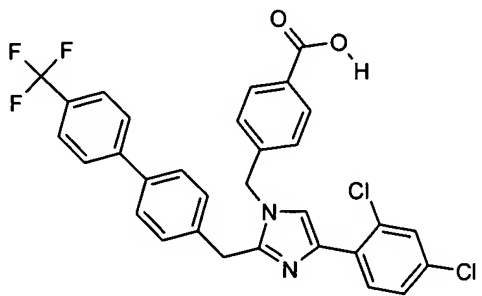
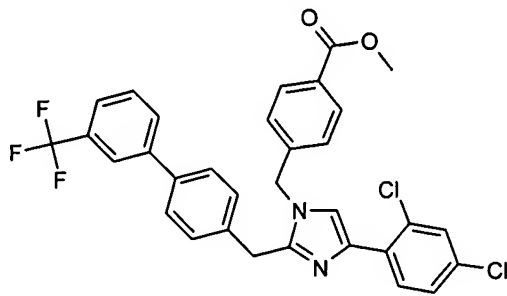
Ex.	Structure	Name
258		4-(4'-{2-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-2-methylbutyric acid
259		4-(4'-{2-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-pentanoic acid
260		4-({2-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-3H-benzoimidazole-5-carbonyl)-amino)-butyric acid
261		6-{6-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-naphthalen-2-yloxy}-hexanoic acid

Ex.	Structure	Name
262		6-{2-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-3-ethyl-3H-benzoimidazol-5-yloxy}-hexanoic acid
263		6-{2-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-3H-benzoimidazol-5-yloxy}-hexanoic acid
264		(3-{2-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-3H-benzoimidazol-5-ylethynyl}-phenoxy)-acetic acid
265		4-(3-{2-[4-(2,4-dichlorophenyl)-1-ethyl-1H-imidazol-2-yl]-3H-benzoimidazol-5-ylethynyl}-phenoxy)-butyric acid

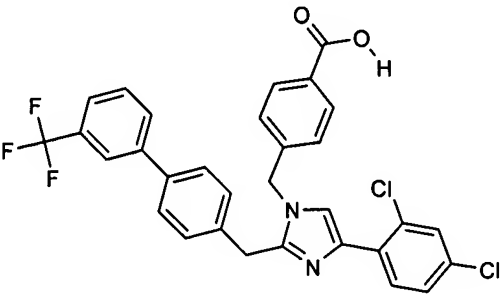
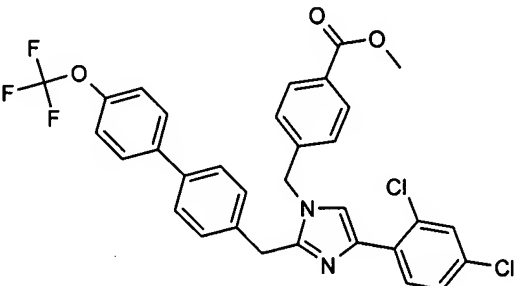
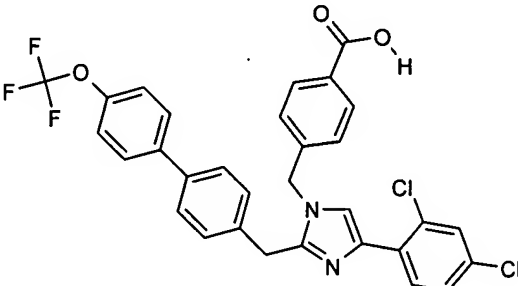
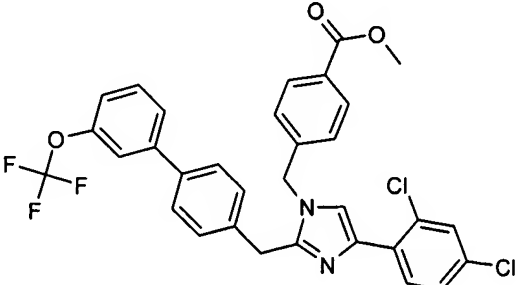
Ex.	Structure	Name
266		{3-[2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-3-(2-trimethylsilyl-ethoxymethyl)-3H-benzimidazol-5-ylethynyl]-phenoxy}-acetic acid
267		3-[2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-3-(2-trimethylsilyl-ethoxymethyl)-3H-benzimidazol-5-ylethynyl]-benzoic acid
268		4-[(2-{4-(2,4-Dichloro-phenyl)-2-[2-(4'-ethoxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-yl}-acetylamino)-methyl]-benzoic acid methyl ester

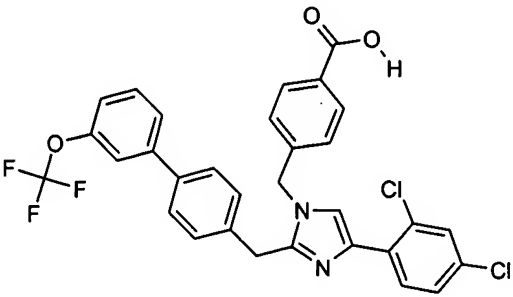
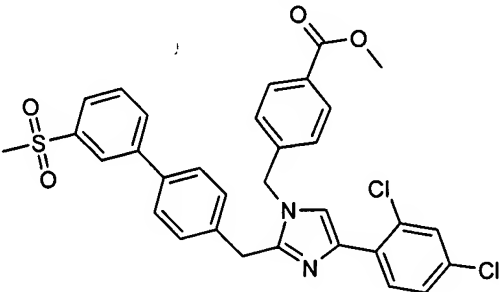
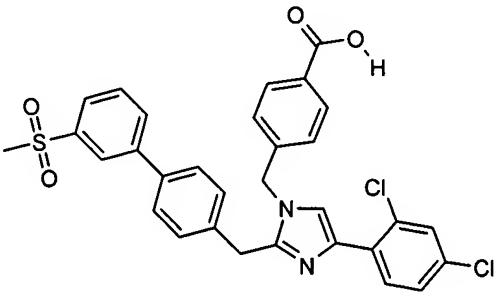
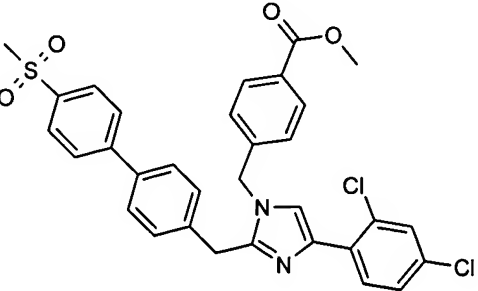
Ex.	Structure	Name
269		4-[(2-{4-(2,4-Dichlorophenyl)-2-[2-(4'-ethoxybiphenyl-4-yl)-(E)-vinyl]-imidazol-1-yl}-acetylamino)-methyl]-benzoic acid
270		4-[4'-(2-{4-(2,4-Dichlorophenyl)-1-[(4-fluorobenzylcarbamoyl)-methyl]-1H-imidazol-2-yl)-(E)-vinyl]-biphenyl-4-yloxy]-butyric acid methyl ester
271		4-[4'-(2-{4-(2,4-Dichlorophenyl)-1-[(4-fluorobenzylcarbamoyl)-methyl]-1H-imidazol-2-yl)-(E)-vinyl]-biphenyl-4-yloxy]-butyric acid
272		4-[4'-(2-{4-(2,4-Dichlorophenyl)-1-[(4-methoxybenzylcarbamoyl)-methyl]-1H-imidazol-2-yl)-(E)-vinyl]-biphenyl-4-yloxy]-butyric acid methyl ester

Ex.	Structure	Name
273		4-[4'-(2-{4-(2,4-Dichlorophenyl)-1-[(4-methoxybenzylcarbamoyl)-methyl]-1H-imidazol-2-yl}-(E)-vinyl)-biphenyl-4-yloxy]-butyric acid
274		4-[4'-(2-{4-(2,4-Dichlorophenyl)-1-[(4-trifluoromethoxybenzylcarbamoyl)-methyl]-1H-imidazol-2-yl}-(E)-vinyl)-biphenyl-4-yloxy]-butyric acid methyl ester
275		4-[4'-(2-{4-(2,4-Dichlorophenyl)-1-[(4--trifluoromethoxybenzylcarbamoyl)-methyl]-1H-imidazol-2-yl}-(E)-vinyl)-biphenyl-4-yloxy]-butyric acid
276		4-{4-(2,4-dichlorophenyl)-2-[2-(6'-fluoro-2'-methoxybiphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid

Ex.	Structure	Name
277		4-[2-[2-(3'-cyano-biphenyl-4-yl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid
278		4-[4-(2,4-dichloro-phenyl)-2-(4'-trifluoromethyl-biphenyl-4-ylmethyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester
279		4-[4-(2,4-dichloro-phenyl)-2-(4'-trifluoromethyl-biphenyl-4-ylmethyl)-imidazol-1-ylmethyl]-benzoic acid
280		4-[4-(2,4-dichloro-phenyl)-2-(3'-trifluoromethyl-biphenyl-4-ylmethyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester

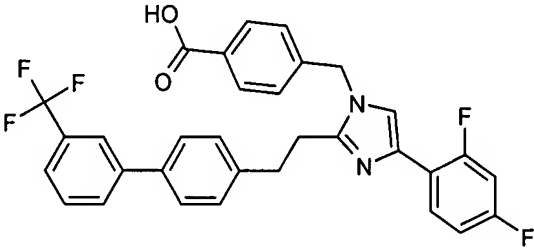
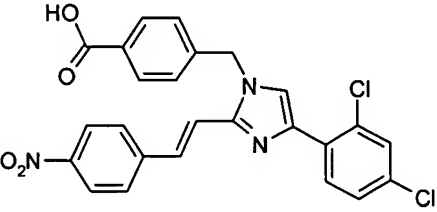
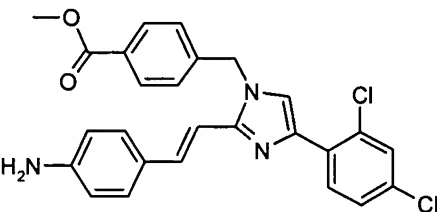
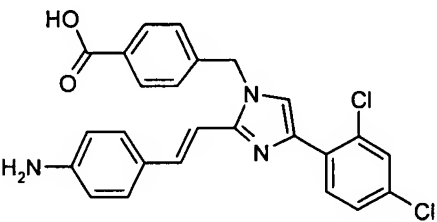


Ex.	Structure	Name
281		4-[4-(2,4-dichloro-phenyl)- 2-(3'-trifluoromethyl- biphenyl-4-ylmethyl)- imidazol-1-ylmethyl]- benzoic acid
282		4-[4-(2,4-dichloro-phenyl)- 2-(4'-trifluoromethoxy- biphenyl-4-ylmethyl)- imidazol-1-ylmethyl]- benzoic acid methyl ester
283		4-[4-(2,4-dichloro-phenyl)- 2-(4'-trifluoromethoxy- biphenyl-4-ylmethyl)- imidazol-1-ylmethyl]- benzoic acid
284		4-[4-(2,4-dichloro-phenyl)- 2-(3'-trifluoromethoxy- biphenyl-4-ylmethyl)- imidazol-1-ylmethyl]- benzoic acid methyl ester

Ex.	Structure	Name
285		4-[4-(2,4-dichloro-phenyl)- 2-(3'-trifluoromethoxy- biphenyl-4-ylmethyl)- imidazol-1-ylmethyl]- benzoic acid
286		4-[4-(2,4-dichloro-phenyl)- 2-(3'-methanesulfonyl- biphenyl-4-ylmethyl)- imidazol-1-ylmethyl]- benzoic acid methyl ester
287		4-[4-(2,4-dichloro-phenyl)- 2-(3'-methanesulfonyl- biphenyl-4-ylmethyl)- imidazol-1-ylmethyl]- benzoic acid
288		4-[4-(2,4-dichloro-phenyl)- 2-(4'-methanesulfonyl- biphenyl-4-ylmethyl)- imidazol-1-ylmethyl]- benzoic acid methyl ester

Ex.	Structure	Name
289		4-[4-(2,4-dichloro-phenyl)-2-(4'-methanesulfonyl-biphenyl-4-ylmethyl)-imidazol-1-ylmethyl]-benzoic acid
290		4-[4-(2,4-dichloro-phenyl)-2-(4-{[2-(4-methanesulfonyl-phenyl)-acetylamino]-methyl}-phenyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester
291		4-[4-(2,4-dichloro-phenyl)-2-(4-{[2-(4-methanesulfonyl-phenyl)-acetylamino]-methyl}-phenyl)-imidazol-1-ylmethyl]-benzoic acid
292		4-[4-(2,4-difluoro-phenyl)-2-[2-(4'-ethoxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl]-benzoic acid

Ex.	Structure	Name
293		4-{4-(2,4-difluoro-phenyl)-2-[2-(4'-ethoxy-biphenyl-4-yl)-ethyl]-imidazol-1-ylmethyl}-benzoic acid
294		4-{4-(2,4-difluoro-phenyl)-2-[2-(4'-hydroxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid
295		4-[2-[2-(4'-butoxy-biphenyl-4-yl)-(E)-vinyl]-4-(2,4-difluoro-phenyl)-imidazol-1-ylmethyl]-benzoic acid
296		4-{4-(2,4-difluoro-phenyl)-2-[2-(3'-trifluoromethyl-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid

Ex.	Structure	Name
297		4-{4-(2,4-difluoro-phenyl)-2-[2-(3'-trifluoromethyl-biphenyl-4-yl)-ethyl]-imidazol-1-ylmethyl}-benzoic acid
298		4-{4-(2,4-dichloro-phenyl)-2-[2-(4-nitro-phenyl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid
299		4-[2-[2-(4-amino-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester
300		4-[2-[2-(4-amino-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid

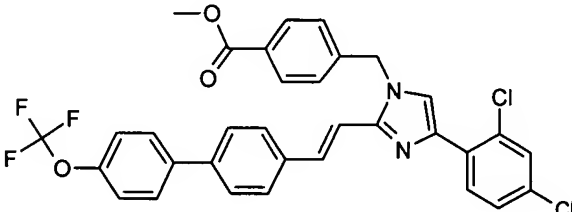
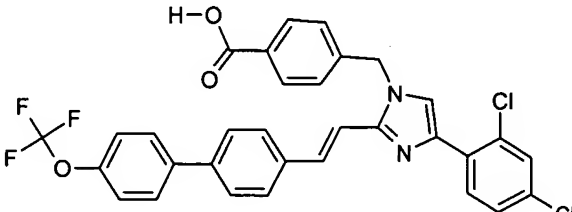
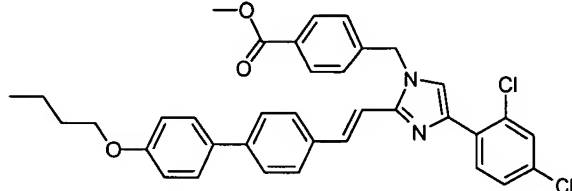
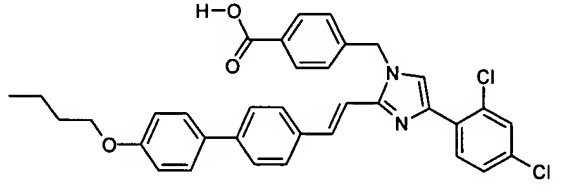
Ex.	Structure	Name
301		4-[2-{2-[4-(butane-1-sulfonylamino)-phenyl]}-(E)-vinyl]-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester
302		4-[2-{2-[4-(butane-1-sulfonylamino)-phenyl]}-(E)-vinyl]-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid
303		4-[2-{2-[4-(4-butylbenzenesulfonylamino)-phenyl]}-(E)-vinyl]-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester
304		4-[2-{2-[4-(4-butylbenzenesulfonylamino)-phenyl]}-(E)-vinyl]-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid

Ex.	Structure	Name
305		4-[2-{2-[4-(4-butylbenzylamino)-phenyl]-(E)-vinyl}-4-(2,4-dichlorophenyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester
306		4-[2-{2-[4-(4-butylbenzylamino)-phenyl]-(E)-vinyl}-4-(2,4-dichlorophenyl)-imidazol-1-ylmethyl]-benzoic acid
307		4-[2-{2-[4-(4-butylbenzenesulfonylamino)-phenyl]-ethyl}-4-(2,4-dichlorophenyl)-imidazol-1-ylmethyl]-benzoic acid
308		4-(4-(2,4-dichlorophenyl)-2-{2-[4-(3-trifluoromethylbenzenesulfonylamino)-phenyl]-(E)-vinyl}-imidazol-1-ylmethyl)-benzoic acid methyl ester

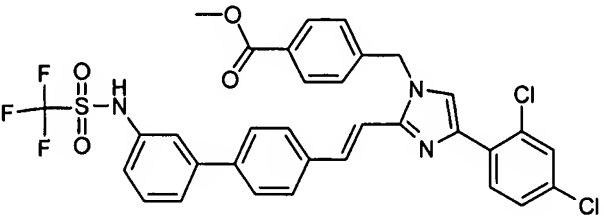
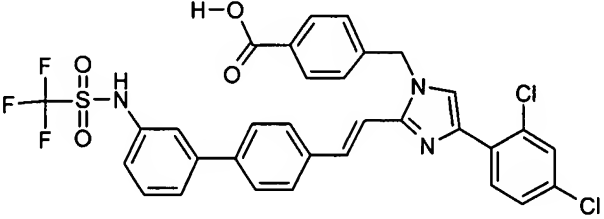
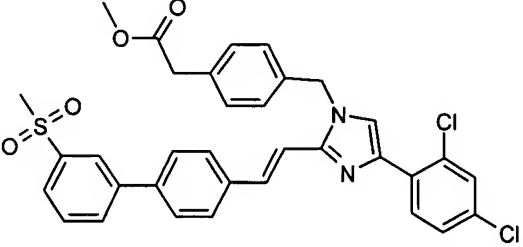
Ex.	Structure	Name
309		4-(4-(2,4-dichloro-phenyl)-2-{2-[4-(4-trifluoromethyl-benzenesulfonylamino)-phenyl]}-(E)-vinyl)-imidazol-1-ylmethyl)-benzoic acid methyl ester
310		4-(4-(2,4-dichloro-phenyl)-2-{2-[4-(3-trifluoromethyl-benzenesulfonylamino)-phenyl]}-(E)-vinyl)-imidazol-1-ylmethyl)-benzoic acid
311		4-(4-(2,4-dichloro-phenyl)-2-{2-[4-(4-trifluoromethyl-benzenesulfonylamino)-phenyl]}-(E)-vinyl)-imidazol-1-ylmethyl)-benzoic acid
312		4-(4-(2,4-dichloro-phenyl)-2-{2-[4-(toluene-4-sulfonylamino)-phenyl]}-(E)-vinyl)-imidazol-1-ylmethyl)-benzoic acid methyl ester



Ex.	Structure	Name
313		4-(4-(2,4-dichloro-phenyl)-2-[2-[4-(toluene-4-sulfonylamino)-phenyl]-(E)-vinyl]-imidazol-1-ylmethyl)-benzoic acid
314		4-[2-(2-[4-[(4-butylbenzenesulfonyl)-methyl-amino]-phenyl]-(E)-vinyl)-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid
315		4-{4-(2,4-dichloro-phenyl)-2-[2-(4'-trifluoromethyl-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-yl-methyl} benzoic acid methyl ester
316		4-{4-(2,4-dichloro-phenyl)-2-[2-(4'-trifluoromethyl-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-yl-methyl} benzoic acid

Ex.	Structure	Name
317		4-{4-(2,4-dichloro-phenyl)-2-[2-(4'-trifluoromethoxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-yl-methyl} benzoic acid methyl ester
318		4-{4-(2,4-dichloro-phenyl)-2[2-(4'-trifluoromethoxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid
319		4-[2-[2-(4'-butoxy-biphenyl-4-yl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester
320		4-[2-[2-(4'-butoxy-biphenyl-4-yl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid

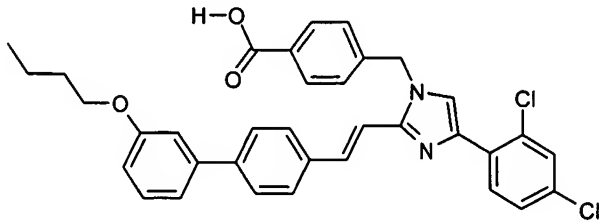
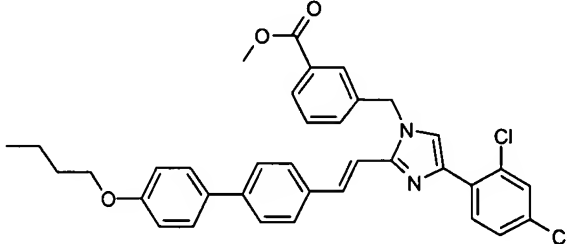
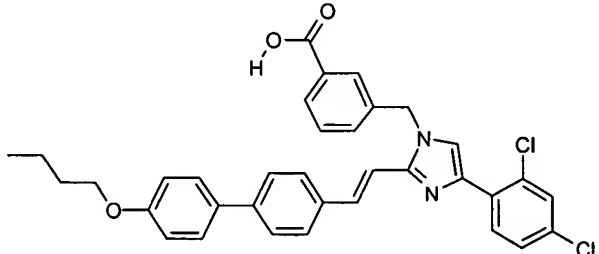
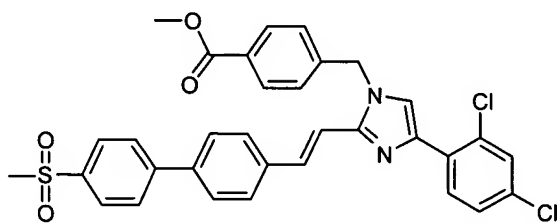
Ex.	Structure	Name
321		4-{4-(2,4-dichloro-phenyl)- 2-[2-(3'-trifluoromethyl- biphenyl-4-yl)-(E)-vinyl]- imidazol-1-yl-methyl} benzoic acid methyl ester
322		4-{4-(2,4-dichloro-phenyl)- 2[2-(3'-trifluoromethyl- biphenyl-4-yl)-(E)-vinyl]- imidazol-1-ylmethyl}- benzoic acid
323		4-{4-(2,4-dichloro-phenyl)- 2-[2-(3'-trifluoromethoxy- biphenyl-4-yl)-(E)-vinyl]- imidazol-1-yl-methyl} benzoic acid methyl ester
324		4-{4-(2,4-dichloro-phenyl)- 2-[2-(3'-trifluoromethoxy- biphenyl-4-yl)-(E)-vinyl]- imidazol-1-ylmethyl}- benzoic acid

Ex.	Structure	Name
325		4-{4-(2,4-dichloro-phenyl)-2-[2-(3-trifluoromethanesulfonyl amino-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid methyl ester
326		4-{4-(2,4-dichloro-phenyl)-2-[2-(3'-trifluoromethanesulfonyl amino-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid
327		(4-{4-(2,4-dichloro-phenyl)-2-[2-(3'-methanesulfonyl-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-phenyl)-acetic acid methyl ester

Ex.	Structure	Name
328		(4-{4-(2,4-dichloro-phenyl)-2-[2-(3'-methanesulfonyl-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-phenyl)-acetic acid
329		4-{4-(2,4-dichloro-phenyl)-2-[2-(4'-ethoxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid methyl ester
330		4-{4-(2,4-dichloro-phenyl)-2-[2-(4'-ethoxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid
331		4-{4-(2,4-dichloro-phenyl)-2-[2-(4'-hydroxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid

Ex.	Structure	Name
332		4-{4-(2,4-dichloro-phenyl)- 2-[2-(4'-ethoxy-4-methoxy- biphenyl-3-yl)-(E)-vinyl]- imidazol-1-ylmethyl}- benzoic acid methyl ester
333		4-{4-(2,4-dichloro-phenyl)- 2-[2-(4'-ethoxy-4-methoxy- biphenyl-3-yl)-(E)-vinyl]- imidazol-1-ylmethyl}- benzoic acid
334		(4-{4-(2,4-dichloro-phenyl)- 2-[2-(3'-trifluoromethyl- biphenyl-4-yl)-(E)-vinyl]- imidazol-1-ylmethyl}- phenyl)-acetic acid methyl ester

Ex.	Structure	Name
335		(4-{4-(2,4-dichloro-phenyl)-2-[2-(3'-trifluoromethyl-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-phenyl)-acetic acid
336		4-{4-(2,4-dichloro-phenyl)-2-[2-(4'-hydroxy-4-methoxy-biphenyl-3-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid methyl ester
337		4-{4-(2,4-dichloro-phenyl)-2-[2-(4'-hydroxy-4-methoxy-biphenyl-3-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid
338		4-[2-[2-(3'-butoxy-biphenyl-4-yl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester

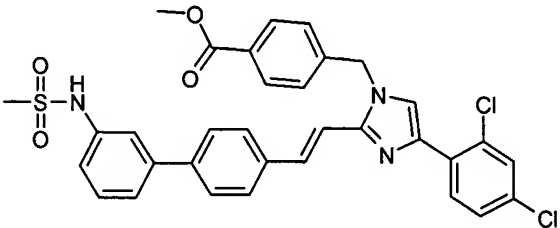
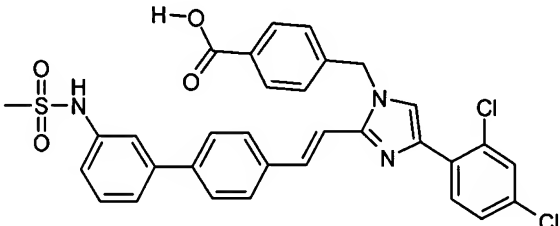
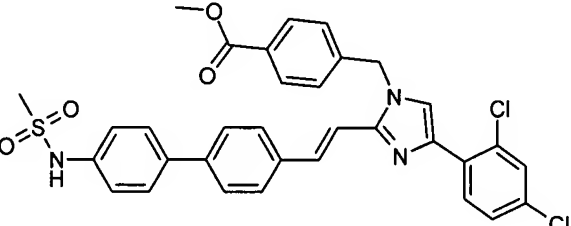
Ex.	Structure	Name
339		4-[2-[2-(3'-butoxy-biphenyl-4-yl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid
340		3-[2-[2-(4'-butoxy-biphenyl-4-yl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester
341		3-[2-[2-(4'-butoxy-biphenyl-4-yl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid
342		4-{4-(2,4-dichloro-phenyl)-2-[2-(4'-methanesulfonyl-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid methyl ester



Ex.	Structure	Name
343		4-{4-(2,4-dichloro-phenyl)-2-[2-(4'-methanesulfonyl-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid
344		4-{4-(2,4-dichloro-phenyl)-2-[2-(3'-methanesulfonyl-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid methyl ester
345		4-{4-(2,4-dichloro-phenyl)-2-[2-(3'-methanesulfonyl-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid
346		2-(4-{2-[4-(2,4-dichloro-phenyl)-1-(4-methoxycarbonyl-benzyl)-1H-imidazol-2-yl]-(E)-vinyl}-phenyl)-pyrrole-1-carboxylic acid tert-butyl ester

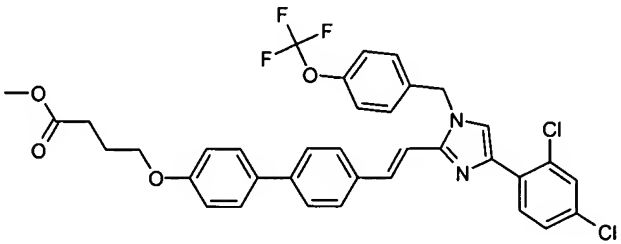
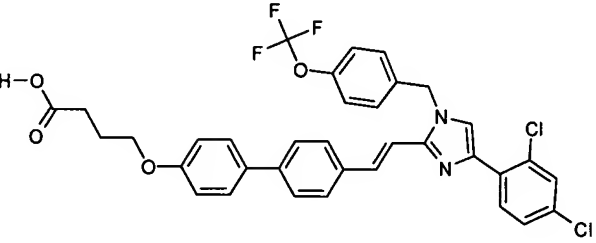
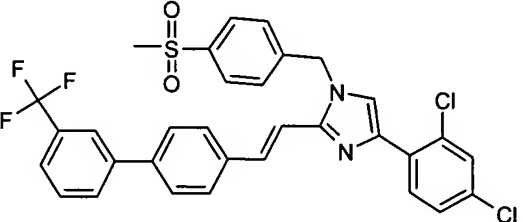
Ex.	Structure	Name
347		2-(4-{2-[1-(4-carboxy-benzyl)-4-(2,4-dichloro-phenyl)-1H-imidazol-2-yl]-(E)-vinyl}-phenyl)-pyrrole-1-carboxylic acid tert-butyl ester
348		4-(4-(2,4-dichloro-phenyl)-2-{2-[4-(1H-pyrrol-2-yl)-phenyl]-(E)-vinyl}imidazol-1-ylmethyl)-benzoic acid
349		4-[2-{2-[4'-(4-nitro-phenoxy)-biphenyl-4-yl]-(E)-vinyl}-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester
350		4-[2-{2-[4'-(4-nitro-phenoxy)-biphenyl-4-yl]-(E)-vinyl}-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid

Ex.	Structure	Name
351		4-[2-{2-[4'-(4-amino-phenoxy)-biphenyl-4-yl]-(E)-vinyl}-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester
352		4-(4-(2,4-dichloro-phenyl)-2-{2-[4'-(4-methanesulfonylamino-phenoxy)-biphenyl-4-yl]-(E)-vinyl}-imidazol-1-ylmethyl)-benzoic acid methyl ester
353		4-(4-(2,4-dichloro-phenyl)-2-{2-[4'-(4-methanesulfonylamino-phenoxy)-biphenyl-4-yl]-(E)-vinyl}-imidazol-1-ylmethyl)-benzoic acid

Ex.	Structure	Name
354		4-{4-(2,4-dichloro-phenyl)-2-[2-(3'-methanesulfonamino-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid methyl ester
355		4-{4-(2,4-dichloro-phenyl)-2-[2-(3'-methanesulfonamino-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid
356		4-{4-(2,4-dichloro-phenyl)-2-[2-(4'-methanesulfonamino-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid methyl ester

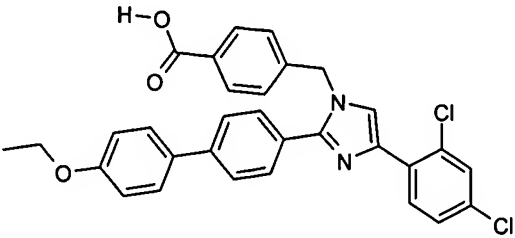
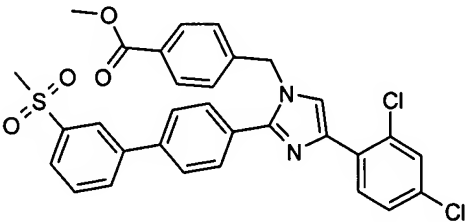
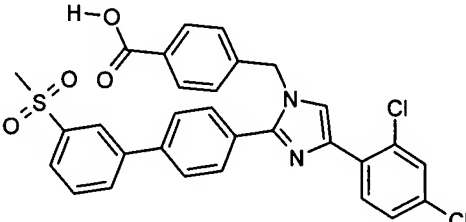
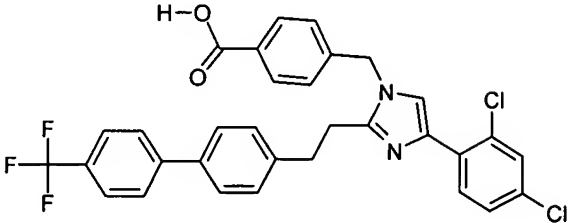
Ex.	Structure	Name
357		4-{4-(2,4-Dichloro-phenyl)-2-[2-(4'-methanesulfonylamino - biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid
358		4'-{2-[4-(2,4-dichloro-phenyl)-1-(4-methoxycarbonyl-benzyl)-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-3-carboxylic acid methyl ester
359		4'-{2-[1-(4-carboxy-benzyl)-4-(2,4-dichloro-phenyl)-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-3-carboxylic acid
360		4-(4-(2,4-dichloro-phenyl)-2-{2-[4'-(4,4,4-trifluorobutoxy)-biphenyl-4-yl]-(E)-vinyl}-imidazol-1-ylmethyl)-benzoic acid methyl ester

Ex.	Structure	Name
361		4-(4-(2,4-dichloro-phenyl)-2-{2-[4'-(4,4,4-trifluorobutoxy)-biphenyl-4-yl]-(E)-vinyl}-imidazol-1-ylmethyl)-benzoic acid
362		4-(4-(2,4-dichloro-phenyl)-2-{2-[4-(6-methoxy-pyridin-3-yl)-phenyl]-(E)-vinyl}-imidazol-1-ylmethyl)-benzoic acid methyl ester
363		4-(4-(2,4-dichloro-phenyl)-2-{2-[4-(6-methoxy-pyridin-3-yl)-phenyl]-(E)-vinyl}-imidazol-1-ylmethyl)-benzoic acid
364		2-[2-(4'-butoxy-biphenyl-4-yl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1-(4-trifluoromethoxy-benzyl)-1H-imidazole

Ex.	Structure	Name
365		4-(4'-{2-[4-(2,4-dichloro-phenyl)-1-(4-trifluoromethoxy-benzyl)-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-butyric acid methyl ester
366		4-(4'-{2-[4-(2,4-dichloro-phenyl)-1-(4-trifluoromethoxy-benzyl)-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-butyric acid
367		4-(2,4-dichloro-phenyl)-1-(4-methanesulfonyl-benzyl)-2-[2-(3'-trifluoromethyl-biphenyl-4-yl)-(E)-vinyl]-1H-imidazole

Ex.	Structure	Name
368		4-(2,4-dichloro-phenyl)-1-(4-methanesulfonyl-benzyl)-2-[2-(3'-methanesulfonyl-biphenyl-4-yl)-(E)-vinyl]-1H-imidazole
369		4-[4-(2,4-dichloro-phenyl)-2-(4'-hydroxy-biphenyl-4-yl)-imidazol-1-ylmethyl]-benzoic acid methyl ester
370		4-[4-(2,4-dichloro-phenyl)-2-(4'-hydroxy-biphenyl-4-yl)-imidazol-1-ylmethyl]-benzoic acid
371		4-[4-(2,4-dichloro-phenyl)-2-(4'-ethoxy-biphenyl-4-yl)-imidazol-1-ylmethyl]-benzoic acid methyl ester



Ex.	Structure	Name
372		4-[4-(2,4-dichloro-phenyl)- 2-(4'-ethoxy-biphenyl-4-yl)- imidazol-1-ylmethyl]- benzoic acid
373		4-[4-(2,4-dichloro-phenyl)- 2-(3'-methanesulfonyl- biphenyl-4-yl)-imidazol-1- ylmethyl]-benzoic acid methyl ester
374		4-[4-(2,4-dichloro-phenyl)- 2-(3'-methanesulfonyl- biphenyl-4-yl)-imidazol-1- ylmethyl]-benzoic acid
375		4-{4-(2,4-dichloro-phenyl)- 2-[2-(4'-trifluoromethyl- biphenyl-4-yl)-ethyl]- imidazol-1-ylmethyl}- benzoic acid

In the structures listed above, it is understood that where a heteroatom such as nitrogen or oxygen has an unfilled valence, a covalent bond exists between a hydrogen and the heteroatom.

5            In another aspect, the present invention comprises a pharmaceutical composition comprising the compound of Formula (I) and one or more pharmaceutically acceptable carriers, excipients, or diluents.

10            As used herein, the term "lower" refers to a group having between one and six carbons.

15            As used herein, the term "alkyl" refers to a straight or branched chain hydrocarbon having from one to ten carbon atoms, optionally substituted with substituents selected from the group consisting of lower alkyl, lower alkoxy, lower alkylsulfanyl, lower alkylsulfenyl, lower alkylsulfonyl, oxo, hydroxy, mercapto, amino optionally substituted by alkyl, carboxy, carbamoyl optionally substituted by alkyl, aminosulfonyl optionally substituted by alkyl, silyloxy optionally substituted by alkoxy, alkyl, or aryl, silyl optionally substituted by alkoxy, alkyl, or aryl, nitro, cyano, halogen, or lower perfluoroalkyl, multiple degrees of substitution being allowed. Such an "alkyl" group may contain one or more O, S, S(O), or S(O)<sub>2</sub> atoms. Examples of "alkyl" as used herein include, but are not limited to, methyl, n-butyl, t-butyl, n-pentyl, isobutyl, and isopropyl, and the like.

25            As used herein, the term "alkylene" refers to a straight or branched chain divalent hydrocarbon radical having from one to ten carbon atoms, optionally substituted with substituents selected from the group consisting of lower alkyl, lower alkoxy, lower alkylsulfanyl, lower alkylsulfenyl, lower alkylsulfonyl, oxo, hydroxy, mercapto, amino optionally substituted by alkyl, carboxy, carbamoyl optionally substituted by alkyl, aminosulfonyl optionally substituted by alkyl, silyloxy optionally substituted by alkoxy, alkyl, or aryl, silyl optionally substituted by alkoxy, alkyl, or aryl, nitro, cyano, halogen, or lower perfluoroalkyl, multiple degrees of substitution being allowed. Such an "alkylene" group may contain one or more O, S, S(O), or S(O)<sub>2</sub> atoms. Examples of "alkylene" as used herein include, but are not limited to, methylene, ethylene, and the like.

As used herein, the term "alkenyl" refers to a hydrocarbon radical having from two to ten carbons and at least one carbon - carbon double bond, optionally substituted with substituents selected from the group consisting of lower alkyl, lower alkoxy, lower alkylsulfanyl, lower alkylsulfenyl, lower alkylsulfonyl, oxo, hydroxy, mercapto, amino optionally substituted by alkyl, carboxy, carbamoyl optionally substituted by alkyl, aminosulfonyl optionally substituted by alkyl, silyloxy optionally substituted by alkoxy, alkyl, or aryl, silyl optionally substituted by alkoxy, alkyl, or aryl, nitro, cyano, halogen, or lower perfluoroalkyl, multiple degrees of substitution being allowed. Such an "alkenyl" group may containing one or more O, S, S(O), or S(O)<sub>2</sub> atoms.

As used herein, the term "alkenylene" refers to a straight or branched chain divalent hydrocarbon radical having from two to ten carbon atoms and one or more carbon - carbon double bonds, optionally substituted with substituents selected from the group consisting of lower alkyl, lower alkoxy, lower alkylsulfanyl, lower alkylsulfenyl, lower alkylsulfonyl, oxo, hydroxy, mercapto, amino optionally substituted by alkyl, carboxy, carbamoyl optionally substituted by alkyl, aminosulfonyl optionally substituted by alkyl, silyloxy optionally substituted by alkoxy, alkyl, or aryl, silyl optionally substituted by alkoxy, alkyl, or aryl, nitro, cyano, halogen, or lower perfluoroalkyl, multiple degrees of substitution being allowed. Such an "alkenylene" group may containing one or more O, S, S(O), or S(O)<sub>2</sub> atoms. Examples of "alkenylene" as used herein include, but are not limited to, ethene-1,2-diyl, propene-1,3-diyl, methylene-1,1-diyl, and the like.

As used herein, the term "alkynyl" refers to a hydrocarbon radical having from two to ten carbons and at least one carbon - carbon triple bond, optionally substituted with substituents selected from the group consisting of lower alkyl, lower alkoxy, lower alkylsulfanyl, lower alkylsulfenyl, lower alkylsulfonyl, oxo, hydroxy, mercapto, amino optionally substituted by alkyl, carboxy, carbamoyl optionally substituted by alkyl, aminosulfonyl optionally substituted by alkyl, silyloxy optionally substituted by alkoxy, alkyl, or aryl, silyl optionally substituted by alkoxy, alkyl, or aryl, nitro, cyano, halogen, or lower perfluoroalkyl, multiple degrees of substitution being allowed. Such an "alkynyl" group may containing one or more O, S, S(O), or S(O)<sub>2</sub> atoms.

As used herein, the term "alkynylene" refers to a straight or branched chain divalent hydrocarbon radical having from two to ten carbon atoms and one or more carbon - carbon triple bonds, optionally substituted with substituents selected from the group consisting of lower alkyl, lower alkoxy, lower alkylsulfanyl, lower alkylsulfenyl, lower alkylsulfonyl, oxo, hydroxy, mercapto, amino optionally substituted by alkyl, carboxy, carbamoyl optionally substituted by alkyl, aminosulfonyl optionally substituted by alkyl, silyloxy optionally substituted by alkoxy, alkyl, or aryl, silyl optionally substituted by alkoxy, alkyl, or aryl, nitro, cyano, halogen, or lower perfluoroalkyl, multiple degrees of substitution being allowed. Such an "alkynylene" group may contain one or more O, S, S(O), or S(O)<sub>2</sub> atoms. Examples of "alkynylene" as used herein include, but are not limited to, ethyne-1,2-diyl, propyne-1,3-diyl, and the like.

As used herein, "cycloalkyl" refers to an alicyclic hydrocarbon group optionally possessing one or more degrees of unsaturation, having from three to twelve carbon atoms, optionally substituted with substituents selected from the group consisting of lower alkyl, lower alkoxy, lower alkylsulfanyl, lower alkylsulfenyl, lower alkylsulfonyl, oxo, hydroxy, mercapto, amino optionally substituted by alkyl, carboxy, carbamoyl optionally substituted by alkyl, aminosulfonyl optionally substituted by alkyl, nitro, cyano, halogen, or lower perfluoroalkyl, multiple degrees of substitution being allowed. "Cycloalkyl" includes by way of example cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl, cycloheptyl, or cyclooctyl, and the like.

As used herein, the term "cycloalkylene" refers to a non-aromatic alicyclic divalent hydrocarbon radical having from three to twelve carbon atoms and optionally possessing one or more degrees of unsaturation, optionally substituted with substituents selected from the group consisting of lower alkyl, lower alkoxy, lower alkylsulfanyl, lower alkylsulfenyl, lower alkylsulfonyl, oxo, hydroxy, mercapto, amino optionally substituted by alkyl, carboxy, carbamoyl optionally substituted by alkyl, aminosulfonyl optionally substituted by alkyl, nitro, cyano, halogen, or lower perfluoroalkyl, multiple degrees of substitution being allowed. Examples of "cycloalkylene" as used herein include, but are not limited to, cyclopropyl-1,1-diyl, cyclopropyl-1,2-diyl, cyclobutyl-1,2-diyl, cyclopentyl-1,3-diyl, cyclohexyl-1,4-diyl, cycloheptyl-1,4-diyl, or cyclooctyl-1,5-diyl, and the like.

As used herein, the term "heterocyclic" or the term "heterocyclyl" refers to a three to twelve-membered heterocyclic ring optionally possessing one or more degrees of unsaturation, containing one or more heteroatomic substitutions selected from S, SO, SO<sub>2</sub>, O, or N, optionally substituted with substituents selected from the group consisting of lower alkyl, lower alkoxy, lower alkylsulfanyl, lower alkylsulfenyl, lower alkylsulfonyl, oxo, hydroxy, mercapto, amino optionally substituted by alkyl, carboxy, carbamoyl optionally substituted by alkyl, aminosulfonyl optionally substituted by alkyl, nitro, cyano, halogen, or lower perfluoroalkyl, multiple degrees of substitution being allowed. Such a ring may be optionally fused to one or more of another "heterocyclic" ring(s) or cycloalkyl ring(s). Examples of "heterocyclic" include, but are not limited to, tetrahydrofuran, 1,4-dioxane, 1,3-dioxane, piperidine, pyrrolidine, morpholine, piperazine, and the like.

As used herein, the term "heterocyclylene" refers to a three to twelve-membered heterocyclic ring diradical optionally having one or more degrees of unsaturation containing one or more heteroatoms selected from S, SO, SO<sub>2</sub>, O, or N, optionally substituted with substituents selected from the group consisting of lower alkyl, lower alkoxy, lower alkylsulfanyl, lower alkylsulfenyl, lower alkylsulfonyl, oxo, hydroxy, mercapto, amino optionally substituted by alkyl, carboxy, carbamoyl optionally substituted by alkyl, aminosulfonyl optionally substituted by alkyl, nitro, cyano, halogen, or lower perfluoroalkyl, multiple degrees of substitution being allowed. Such a ring may be optionally fused to one or more benzene rings or to one or more of another "heterocyclic" rings or cycloalkyl rings. Examples of "heterocyclylene" include, but are not limited to, tetrahydrofuran-2,5-diyl, morpholine-2,3-diyl, pyran-2,4-diyl, 1,4-dioxane-2,3-diyl, 1,3-dioxane-2,4-diyl, piperidine-2,4-diyl, piperidine-1,4-diyl, pyrrolidine-1,3-diyl, morpholine-2,4-diyl, piperazine-1,4-diyl, and the like.

As used herein, the term "aryl" refers to a benzene ring or to an optionally substituted benzene ring system fused to one or more optionally substituted benzene rings, optionally substituted with substituents selected from the group consisting of lower alkyl, lower alkoxy, lower alkylsulfanyl, lower alkylsulfenyl, lower alkylsulfonyl, oxo, hydroxy, mercapto, amino optionally substituted by alkyl, carboxy, tetrazolyl, alkoxycarbonylamino optionally substituted by alkyl, acylamino optionally substituted by alkyl, carbamoyl optionally substituted by alkyl, aminosulfonyl optionally substituted by alkyl, acyl, aroyl, heteroaroyl, acyloxy, aroyloxy, heteroaroyloxy, alkoxycarbonyl,

aryloxycarbonyl, trialkylsilylalkyloxyalkyl, silyloxy optionally substituted by alkoxy, alkyl, or aryl, silyl optionally substituted by alkoxy, alkyl, or aryl, nitro, cyano, halogen, or lower perfluoroalkyl, multiple degrees of substitution being allowed. Examples of aryl include, but are not limited to, phenyl, 2-naphthyl, 1-naphthyl, 1-anthracenyl, and the like.

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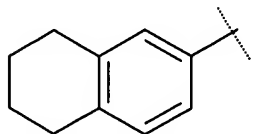
As used herein, the term "arylene" refers to a benzene ring diradical or to a benzene ring system diradical fused to one or more optionally substituted benzene rings, optionally substituted with substituents selected from the group consisting of lower alkyl, lower alkoxy, lower alkylsulfanyl, lower alkylsulfenyl, lower alkylsulfonyl, oxo, hydroxy, mercapto, amino optionally substituted by alkyl, carboxy, tetrazolyl, alkoxycarbonylamino optionally substituted by alkyl, acylamino optionally substituted by alkyl, carbamoyl optionally substituted by alkyl, aminosulfonyl optionally substituted by alkyl, acyl, aroyl, heteroaroyl, acyloxy, aroyloxy, heteroaroyloxy, alkoxycarbonyl, aryloxycarbonyl, trialkylsilylalkyloxyalkyl, silyloxy optionally substituted by alkoxy, alkyl, or aryl, silyl optionally substituted by alkoxy, alkyl, or aryl, nitro, cyano, halogen, or lower perfluoroalkyl, multiple degrees of substitution being allowed. Examples of "arylene" include, but are not limited to, benzene-1,4-diyl, naphthalene-1,8-diyl, and the like.

As used herein, the term "heteroaryl" refers to a five - to seven - membered aromatic ring, or to a polycyclic heterocyclic aromatic ring, containing one or more nitrogen, oxygen, or sulfur heteroatoms, where N-oxides and sulfur monoxides and sulfur dioxides are permissible heteroaromatic substitutions, optionally substituted with substituents selected from the group consisting of lower alkyl, lower alkoxy, lower alkylsulfanyl, lower alkylsulfenyl, lower alkylsulfonyl, oxo, hydroxy, mercapto, amino optionally substituted by alkyl, carboxy, tetrazolyl, alkoxycarbonylamino optionally substituted by alkyl, acylamino optionally substituted by alkyl, carbamoyl optionally substituted by alkyl, aminosulfonyl optionally substituted by alkyl, acyl, aroyl, heteroaroyl, acyloxy, aroyloxy, heteroaroyloxy, alkoxycarbonyl, aryloxycarbonyl, trialkylsilylalkyloxyalkyl, silyloxy optionally substituted by alkoxy, alkyl, or aryl, silyl optionally substituted by alkoxy, alkyl, or aryl, nitro, cyano, halogen, or lower perfluoroalkyl, multiple degrees of substitution being allowed. For polycyclic aromatic ring systems, one or more of the rings may contain one or more heteroatoms. Examples of "heteroaryl" used herein are furan, thiophene, pyrrole, imidazole, pyrazole, triazole, tetrazole, thiazole, oxazole, isoxazole, oxadiazole, thiadiazole, isothiazole, pyridine,

pyridazine, pyrazine, pyrimidine, quinoline, isoquinoline, quinazoline, benzofuran, benzothiophene, indole, and indazole, and the like.

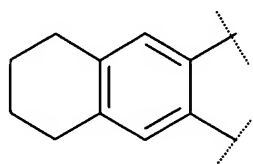
As used herein, the term "heteroarylene" refers to a five - to seven - membered aromatic ring diradical, or to a polycyclic heterocyclic aromatic ring diradical, containing one or more nitrogen, oxygen, or sulfur heteroatoms, where N-oxides and sulfur monoxides and sulfur dioxides are permissible heteroaromatic substitutions, optionally substituted with substituents selected from the group consisting of lower alkyl, lower alkoxy, lower alkylsulfanyl, lower alkylsulfenyl, lower alkylsulfonyl, oxo, hydroxy, mercapto, amino optionally substituted by alkyl, carboxy, tetrazolyl, alkoxycarbonylamino optionally substituted by alkyl, acylamino optionally substituted by alkyl, carbamoyl optionally substituted by alkyl, aminosulfonyl optionally substituted by alkyl, acyl, aroyl, heteroaroyl, acyloxy, aroyloxy, heteroaroyloxy, alkoxycarbonyl, aryloxycarbonyl, trialkylsilylalkyloxyalkyl, silyloxy optionally substituted by alkoxy, alkyl, or aryl, silyl optionally substituted by alkoxy, alkyl, or aryl, nitro, cyano, halogen, or lower perfluoroalkyl, multiple degrees of substitution being allowed. For polycyclic aromatic ring system diradicals, one or more of the rings may contain one or more heteroatoms. Examples of "heteroarylene" used herein are furan-2,5-diyl, thiophene-2,4-diyl, 1,3,4-oxadiazole-2,5-diyl, 1,3,4-thiadiazole-2,5-diyl, 1,3-thiazole-2,4-diyl, 1,3-thiazole-2,5-diyl, pyridine-2,4-diyl, pyridine-2,3-diyl, pyridine-2,5-diyl, pyrimidine-2,4-diyl, quinoline-2,3-diyl, and the like.

As used herein, the term "fused cycloalkylaryl" refers to one or more cycloalkyl groups fused to an aryl group, the aryl and cycloalkyl groups having two atoms in common, and wherein the aryl group is the point of substitution. Examples of "fused cycloalkylaryl" used herein include 5-indanyl, 5,6,7,8-tetrahydro-2-naphthyl,



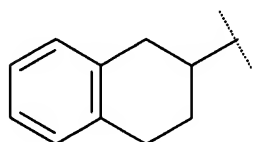
, and the like.

As used herein, the term "fused cycloalkylarylene" refers to a fused cycloalkylaryl, wherein the aryl group is divalent. Examples include



, and the like.

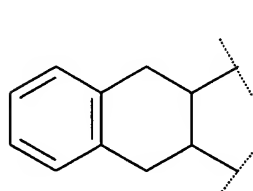
5 As used herein, the term "fused arylcycloalkyl" refers to one or more aryl groups fused to a cycloalkyl group, the cycloalkyl and aryl groups having two atoms in common, and wherein the cycloalkyl group is the point of substitution. Examples of "fused arylcycloalkyl" used herein include 1-indanyl, 2-indanyl, 9-fluorenyl, 1-(1,2,3,4-



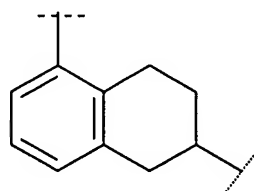
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, and the like.

As used herein, the term "fused arylcycloalkylene" refers to a fused arylcycloalkyl, wherein the cycloalkyl group is divalent. Examples include 9,1-fluorenylene,



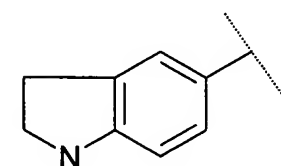
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, and the like.

As used herein, the term "fused heterocyclaryl" refers to one or more heterocycl groups fused to an aryl group, the aryl and heterocycl groups having two atoms in common, and wherein the aryl group is the point of substitution. Examples of

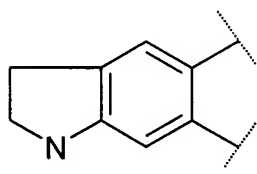
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, and the like

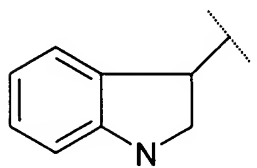


As used herein, the term "fused heterocyclarylene" refers to a fused heterocyclaryl, wherein the aryl group is divalent. Examples include



, and the like.

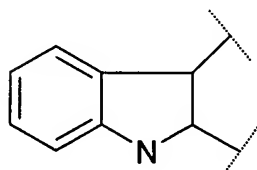
- 5 As used herein, the term "fused arylheterocyclyl" refers to one or more aryl groups fused to a heterocyclyl group, the heterocyclyl and aryl groups having two atoms in common, and wherein the heterocyclyl group is the point of substitution. Examples of "fused arylheterocyclyl" used herein include 2-(1,3-benzodioxolyl),



, and the like.

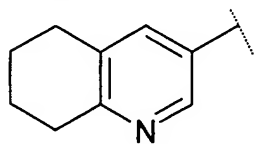
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As used herein, the term "fused arylheterocyclylene" refers to a fused arylheterocyclyl, wherein the heterocyclyl group is divalent. Examples include



, and the like.

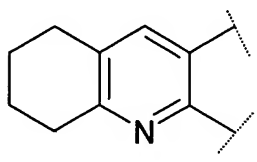
- 15 As used herein, the term "fused cycloalkylheteroaryl" refers to one or more cycloalkyl groups fused to a heteroaryl group, the heteroaryl and cycloalkyl groups having two atoms in common, and wherein the heteroaryl group is the point of substitution. Examples of "fused cycloalkylheteroaryl" used herein include 5-aza-6-indanyl,



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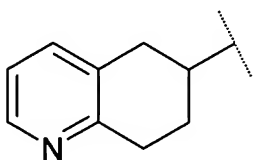
, and the like.

As used herein, the term "fused cycloalkylheteroarylene" refers to a fused cycloalkylheteroaryl, wherein the heteroaryl group is divalent. Examples include



, and the like.

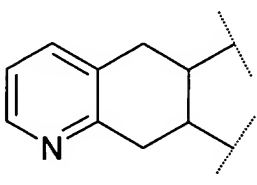
5 As used herein, the term "fused heteroarylcycloalkyl" refers to one or more heteroaryl groups fused to a cycloalkyl group, the cycloalkyl and heteroaryl groups having two atoms in common, and wherein the cycloalkyl group is the point of substitution. Examples of "fused heteroarylcycloalkyl" used herein include 5-aza-1-indanyl,



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and the like.

As used herein, the term "fused heteroarylcycloalkylene" refers to a fused heteroarylcycloalkyl, wherein the cycloalkyl group is divalent. Examples include

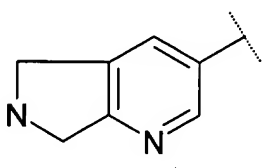


, and the like.

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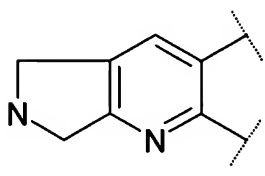
As used herein, the term "fused heterocyclylheteroaryl" refers to one or more heterocyclyl groups fused to a heteroaryl group, the heteroaryl and heterocyclyl groups having two atoms in common, and wherein the heteroaryl group is the point of substitution. Examples of "fused heterocyclylheteroaryl" used herein include 1,2,3,4-tetrahydro-beta-carbolin-8-yl,

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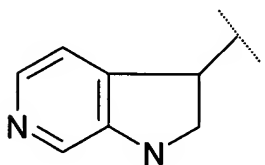
and the like.

As used herein, the term "fused heterocyclylheteroarylene" refers to a fused heterocyclylheteroaryl, wherein the heteroaryl group is divalent. Examples include



, and the like.

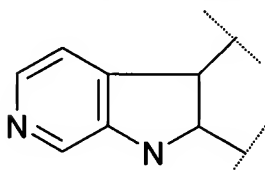
5 As used herein, the term "fused heteroarylheterocyclyl" refers to one or more heteroaryl groups fused to a heterocyclyl group, the heterocyclyl and heteroaryl groups having two atoms in common, and wherein the heterocyclyl group is the point of substitution. Examples of "fused heteroarylheterocyclyl" used herein include –5-aza-2,3-dihydrobenzofuran-2-yl,



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, and the like.

As used herein, the term "fused heteroarylheterocyclylene" refers to a fused heteroarylheterocyclyl, wherein the heterocyclyl group is divalent. Examples include



, and the like.

15

As used herein, the term "acid isostere" refers to a substituent group which will ionize at physiological pH to bear a net negative charge. Examples of such "acid isosteres" include but are not limited to heteroaryl groups such as but not limited to isoxazol-3-ol-5-yl, 1H-tetrazole-5-yl, or 2H-tetrazole-5-yl. Such acid isosteres include but are not limited to heterocyclyl groups such as but not limited to imidazolidine-2,4-dione-5-yl, imidazolidine-2,4-dione-1-yl, 1,3-thiazolidine-2,4-dione-5-yl, or 5-hydroxy-4H-pyran-4-on-2-yl.

20

As used herein, the term "direct bond", where part of a structural variable specification, refers to the direct joining of the substituents flanking (preceding and

25

succeeding) the variable taken as a "direct bond". Where two or more consecutive variables are specified each as a "direct bond", those substituents flanking (preceding and succeeding) those two or more consecutive specified "direct bonds" are directly joined.

5

As used herein, the term "alkoxy" refers to the group  $R_aO-$ , where  $R_a$  is alkyl.

As used herein, the term "alkenyloxy" refers to the group  $R_aO-$ , where  $R_a$  is alkenyl.

10

As used herein, the term "alkynyloxy" refers to the group  $R_aO-$ , where  $R_a$  is alkynyl.

15

As used herein, the term "alkylsulfanyl" refers to the group  $R_aS-$ , where  $R_a$  is alkyl.

As used herein, the term "alkenylsulfanyl" refers to the group  $R_aS-$ , where  $R_a$  is alkenyl.

20

As used herein, the term "alkynylsulfanyl" refers to the group  $R_aS-$ , where  $R_a$  is alkynyl.

As used herein, the term "alkylsulfenyl" refers to the group  $R_aS(O)-$ , where  $R_a$  is alkyl.

25

As used herein, the term "alkenylsulfenyl" refers to the group  $R_aS(O)-$ , where  $R_a$  is alkenyl.

30

As used herein, the term "alkynylsulfenyl" refers to the group  $R_aS(O)-$ , where  $R_a$  is alkynyl.

As used herein, the term "alkylsulfonyl" refers to the group  $R_aSO_2-$ , where  $R_a$  is alkyl.

As used herein, the term "alkenylsulfonyl" refers to the group  $R_aSO_2-$ , where  $R_a$  is alkenyl.

5 As used herein, the term "alkynylsulfonyl" refers to the group  $R_aSO_2-$ , where  $R_a$  is alkynyl.

As used herein, the term "acyl" refers to the group  $R_aC(O)-$ , where  $R_a$  is alkyl, alkenyl, alkynyl, cycloalkyl, cycloalkenyl, or heterocyclyl.

10 As used herein, the term "aroyl" refers to the group  $R_aC(O)-$ , where  $R_a$  is aryl.

As used herein, the term "heteroaroyl" refers to the group  $R_aC(O)-$ , where  $R_a$  is heteroaryl.

15 As used herein, the term "alkoxycarbonyl" refers to the group  $R_aOC(O)-$ , where  $R_a$  is alkyl.

As used herein, the term "acyloxy" refers to the group  $R_aC(O)O-$ , where  $R_a$  is alkyl, alkenyl, alkynyl, cycloalkyl, cycloalkenyl, or heterocyclyl.

20 As used herein, the term "aroyloxy" refers to the group  $R_aC(O)O-$ , where  $R_a$  is aryl.

25 As used herein, the term "heteroaroyloxy" refers to the group  $R_aC(O)O-$ , where  $R_a$  is heteroaryl.

As used herein, the term "optionally" means that the subsequently described event(s) may or may not occur, and includes both event(s) which occur and events that do not occur.

30 As used herein, the term "substituted" refers to substitution with the named substituent or substituents, multiple degrees of substitution being allowed unless otherwise stated.

As used herein, the terms "contain" or "containing" can refer to in-line substitutions at any position along the above defined alkyl, alkenyl, alkynyl or cycloalkyl substituents with one or more of any of O, S, SO, SO<sub>2</sub>, N, or N-alkyl, including, for example, -CH<sub>2</sub>-O-CH<sub>2</sub>-, -CH<sub>2</sub>-SO<sub>2</sub>-CH<sub>2</sub>-, -CH<sub>2</sub>-NH-CH<sub>3</sub> and so forth.

5

Whenever the terms "alkyl" or "aryl" or either of their prefix roots appear in a name of a substituent (e.g. arylalkoxyaryloxy) they shall be interpreted as including those limitations given above for "alkyl" and "aryl". Alkyl or cycloalkyl substituents shall be recognized as being functionally equivalent to those having one or more degrees of

10 unsaturation. Designated numbers of carbon atoms (e.g. C<sub>1-10</sub>) shall refer independently to the number of carbon atoms in an alkyl, alkenyl or alkynyl or cyclic alkyl moiety or to the alkyl portion of a larger substituent in which the term "alkyl" appears as its prefix root.

As used herein, the term "oxo" shall refer to the substituent =O.

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As used herein, the term "halogen" or "halo" shall include iodine, bromine, chlorine and fluorine.

As used herein, the term "mercapto" shall refer to the substituent -SH.

20

As used herein, the term "carboxy" shall refer to the substituent -COOH.

As used herein, the term "cyano" shall refer to the substituent -CN.

25

As used herein, the term "aminosulfonyl" shall refer to the substituent -SO<sub>2</sub>NH<sub>2</sub>.

As used herein, the term "carbamoyl" shall refer to the substituent -C(O)NH<sub>2</sub>.

As used herein, the term "sulfanyl" shall refer to the substituent -S-.

30

As used herein, the term "sulfenyl" shall refer to the substituent -S(O)-.

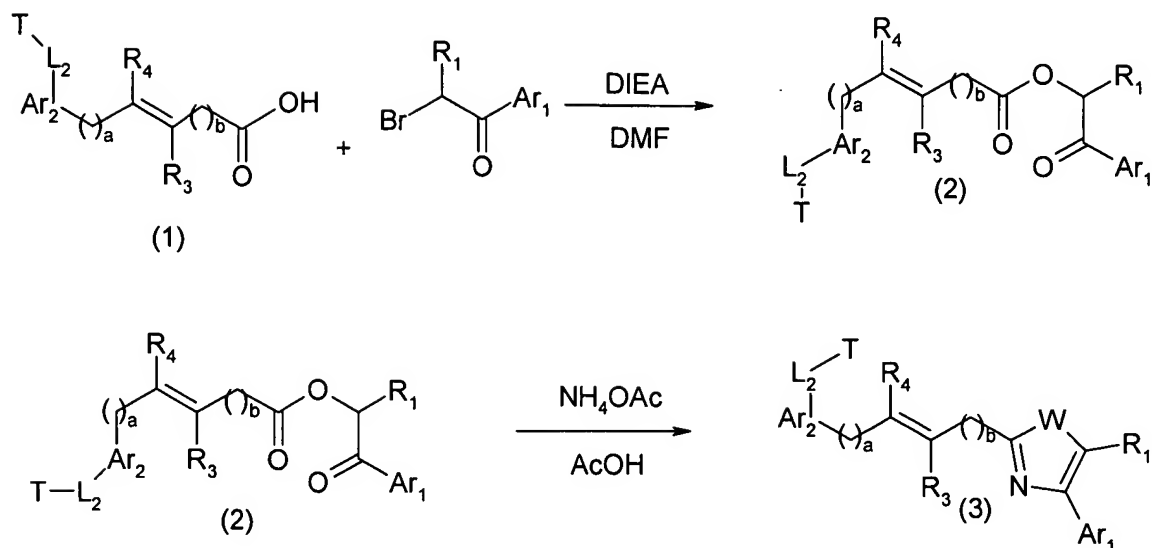
As used herein, the term "sulfonyl" shall refer to the substituent -S(O)<sub>2</sub>-.

The compounds can be prepared readily according to the following reaction Schemes (in which variables are as defined before or are defined) using readily available starting materials, reagents and conventional synthesis procedures. In these reactions, it is also possible to make use of variants which are themselves known to those of ordinary skill in this art, but are not mentioned in greater detail.

The present invention also provides a method for the synthesis of compounds useful as intermediates in the preparation of compounds of Formula (I) along with methods for the preparation of compounds of Formula (I). Unless otherwise specified, structural variables are as defined for Formula (I).

An unsaturated carboxylic acid (Scheme 1) can be reacted with aryl acyl bromides in the presence of base such as DIEA, triethyl amine, or DBU in a polar solvents such as THF, or DMF to afford intermediate keto-ester (2), which can be treated with ammonium acetate in acetic acid at temperatures ranging from 60-120° C, which leads to the corresponding mixture of oxazole (W = O) and imidazole (W = N) (3) (Strzybny, P. P. E ; van Es, T. ; Backeberg, O. G. J. Org. Chem. 1963, 25, 1151). The ratio of oxazole and imidazole may vary depending on the substitution and reaction conditions and the two compounds were separated through silica gel column. Alternatively other conditions may also be employed for cyclization of keto-esters (2), such as BF<sub>3</sub>/Et<sub>2</sub>O, methanolic ammonia, at temperatures ranging from room temperature to 120° C.

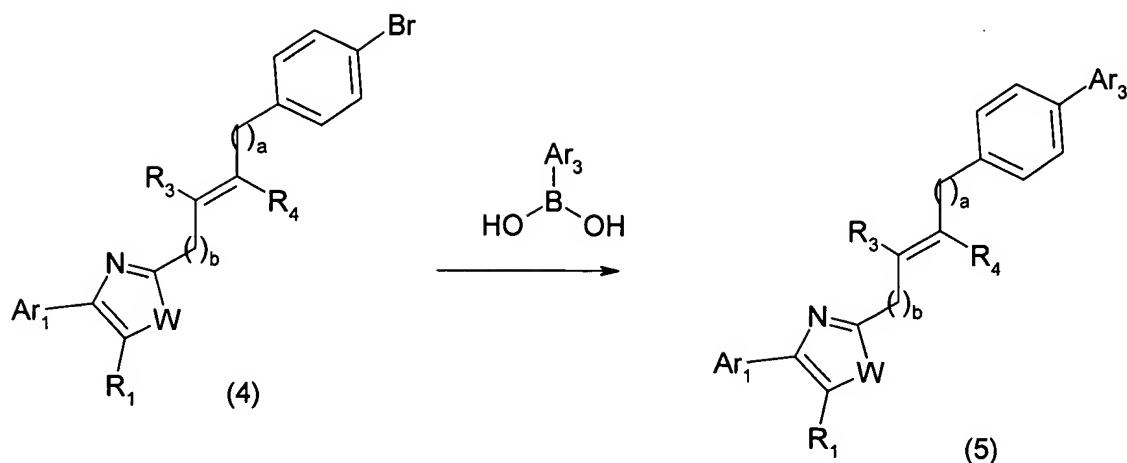
Scheme 1



In another embodiment, a bromo or iodo aryl compound (4) (Scheme 2) can be subjected to palladium catalyzed coupling (Syn. Commu. 1981, 11, 513-574) with an optionally substituted heteroaryl or aryl boronic acid.  $\text{Ar}_3$  is a group such as but not limited to a heteroaryl or aryl group. Typical conditions used to carry out the coupling reaction include the use of boronic acid or ester as the coupling partner, a palladium catalyst (2 to 20 mole %) such as  $\text{Pd}(\text{PPh}_3)_4$  or [1,1-bis(diphenylphosphino)-ferrocene] dichloro-palladium (II) and base such as potassium carbonate, sodium carbonate, barium hydroxide, potassium phosphate or triethyl amine in a suitable solvent such as aqueous dimethoxyethane, THF, acetone, DMF or toluene at temperatures ranging from 25° C to 125° C. In this instance,  $\text{Ar}_3$  is a group such as, but not limited to, an aryl or heteroaryl group.

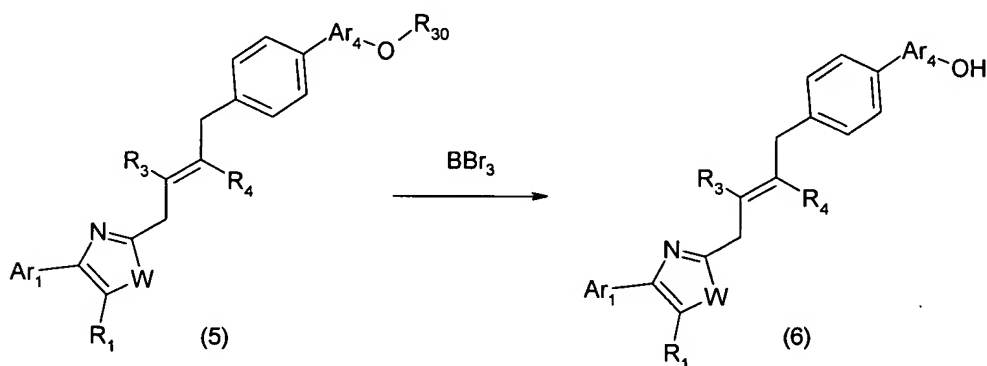
Scheme 2





In another embodiment (Scheme 3), the O-alkyl, or O-aryl group in compound (5) can be dealkylated or dearylated using reagents such as boron tribromide or PhSMe, in a solvent such as dichloromethane or TFA, at temperatures ranging from  $-20^{\circ}C$  to room temperature to afford hydroxy biphenyls (6). In this instance,  $Ar_4$  is a group such as, but not limited to, heterarylene or arylene, and  $R_{30}$  is a group such as, but not limited to, lower alkyl.

#### 10 Scheme 3

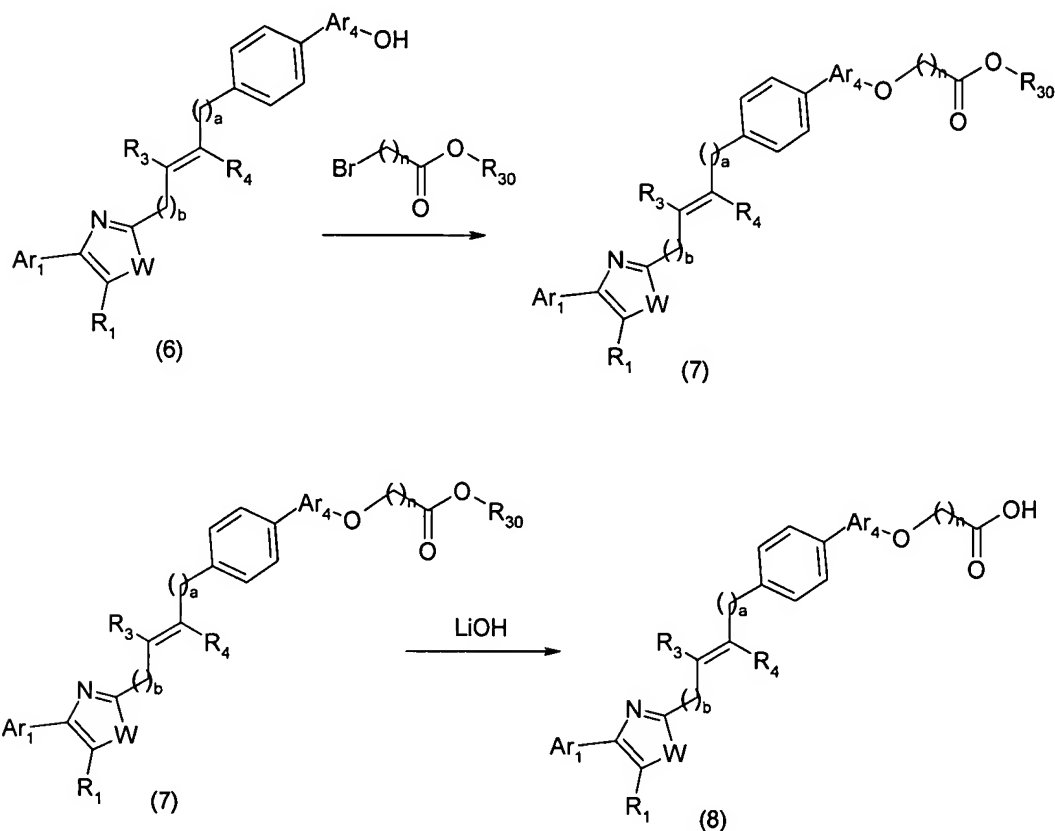


In Scheme 4, the biphenyl alcohols (5) were alkylated with bromo or chloro alkyl carboxylates  $[(Br \text{ or } Cl)(CH_2)_n-CO_2-R_{30}]$  [where  $n=1$  to  $6$ ] in the presence of base such as sodium hydride, potassium tert-butoxide, or potassium carbonate using DMF, THF, acetonitrile as the solvent at temperatures ranging from  $50^{\circ}C$  to  $100^{\circ}C$ . Subsequent saponification of esters (6) with bases such as sodium hydroxide, lithium hydroxide in aqueous and organic solvents such as THF, methanol, at temperatures ranging from room temperature to  $60^{\circ}C$  produces carboxylic acid (8). In this instance,  $R_{30}$  is a group

TTP 2002-08

such as, but not limited to, lower alkyl. In this instance,  $Ar_4$  is a group such as, but not limited to, an arylene or heteroarylene group.

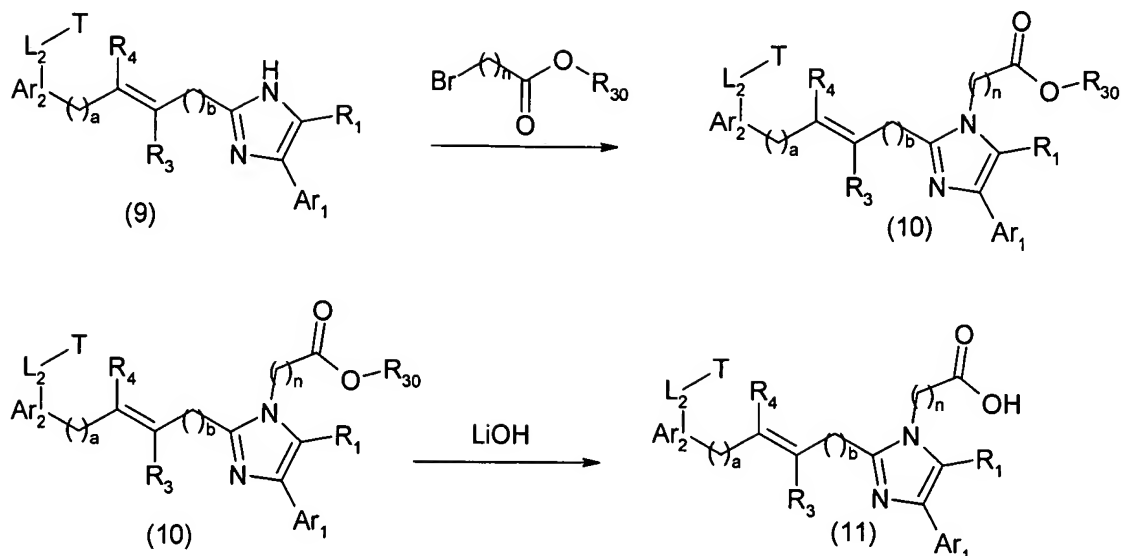
Scheme 4



In another embodiment (Scheme 5), the imidazole nitrogen in compound (9) can be alkylated with bromo or chloro alkyl carboxylates  $[(Br \text{ or } Cl) (CH_2)_n CO_2 R_{30}]$  in the presence of base such as sodium hydride, potassium tert-butoxide, or potassium carbonate using DMF, THF, or acetonitrile as the solvent at temperatures ranging from 50° C to 100° C. Subsequent saponification of esters (10) with base such as sodium hydroxide, lithium hydroxide in aqueous and organic solvents such as THF, or methanol at temperatures ranging from room temperature to 60° C produces carboxylic acid (11). In this instance,  $R_{30}$  is a group such as, but not limited to, lower alkyl.

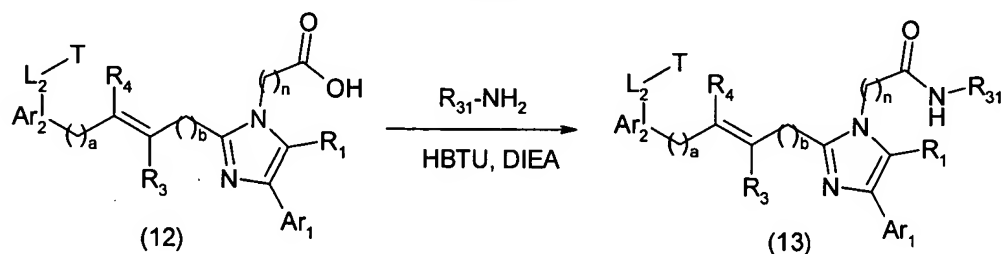
Scheme 5

TTP 2002-08



In Scheme 6 the carboxylic acids (12) can be transformed into their carboxylic acid amide analogs. This transformation can be accomplished using standard methods to effect carboxylic acid to carboxylic acid amide transformations. These methods include converting the acid to an activated acid, reacting with one or more molar equivalents of the desired amine. Methods to activate the carboxylic acid include reacting the acid with one or more molar equivalents of DIC or DIEA, with or without one or more molar equivalents of HOBt or HBTU in a suitable solvent such as dichloromethane or DMF at temperatures ranging from 0° C to 40° C to afford amides (13). In this instance,  $R_{31}$  is a group such as, but not limited to, -alkyl or -alkylene-aryl.

Scheme 6

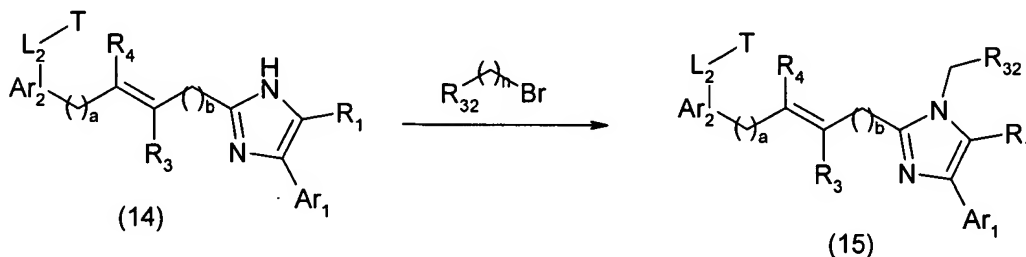


In another embodiment (Scheme 7), an imidazole nitrogen in compound (14) was alkylated with alkyl halides  $[(Br \text{ or } Cl)(CH_2)_n-R_{32}]$  [ $n = 1$  to  $6$ ] in the presence of base such as sodium hydride, potassium tert-butoxide, or potassium carbonate using DMF,

THF, or acetonitrile as the solvent at temperatures ranging from 0° C to 80° C afford N-alkylated products (15). In this instance R<sub>32</sub> is a group such as, but not limited to, -alkyl, aryl, or -alkenylene-aryl.

5

Scheme 7



The term "amino protecting group" as used herein refers to substituents of the amino group commonly employed to block or protect the amino functionality while reacting other functional groups on the compound. Examples of such amino-protecting groups include the formyl group, the trityl group, the phthalimido group, the trichloroacetyl group, the chloroacetyl, bromoacetyl and iodoacetyl groups, urethane-type blocking groups such as benzyloxycarbonyl, 4-phenylbenzyloxycarbonyl, 2-methylbenzyloxycarbonyl, 4-methoxybenzyloxycarbonyl, 4-fluorobenzyloxycarbonyl, 4-chlorobenzyloxycarbonyl, 3-chlorobenzyloxycarbonyl, 2-chlorobenzyloxycarbonyl, 2,4-dichlorobenzyloxycarbonyl, 4-bromobenzyloxycarbonyl, 3-bromobenzyloxycarbonyl, 4-nitrobenzyloxycarbonyl, 4-cyanobenzyloxy-carbonyl, 2-(4-xenyl)iso-propoxycarbonyl, 1,1-diphenyleth-1-yloxycarbonyl, 1,1-diphenylprop-1-yloxycarbonyl, 2-phenylprop-2-yloxycarbonyl, 2-(p-toluy)prop-2-yloxycarbonyl, cyclopentanyloxycarbonyl, 1-methylcyclopentanyloxycarbonyl, cyclohexanyloxycarbonyl, 1-methylcyclohexanyloxycarbonyl, 2-methylcyclohexanyloxycarbonyl, 2-(4-toluylsulfonyl)ethoxycarbonyl, 2(methylsulfonyl)ethoxycarbonyl, 2-(triphenylphosphino)ethoxycarbonyl, 9-fluorenylmethoxycarbonyl ("Fmoc"), t-butoxycarbonyl ("BOC"), 2-(trimethylsilyl)ethoxycarbonyl, allyloxycarbonyl, 1-(trimethylsilylmethyl)prop-1-enyloxycarbonyl, 5-benzisoxalylmethoxycarbonyl, 4-acetoxybenzyloxycarbonyl, 2,2,2-trichloroethoxycarbonyl, 2-ethynyl-2-propoxycarbonyl, cyclopropylmethoxycarbonyl, 4-(decyloxy)benzyloxycarbonyl, isobornyloxycarbonyl, 1-piperidyloxycarbonyl and the like; the benzoylmethylsulfonyl group, the 2-(nitro)phenylsulfonyl group, the diphenylphosphine oxide group and like amino-

protecting groups. The species of amino-protecting group employed is not critical so long as the derivatized amino group is stable to the condition of subsequent reaction(s) on other positions of the compound of Formula (I) and can be removed at the desired point without disrupting the remainder of the molecule. In an embodiment, amino-protecting groups are the allyloxycarbonyl, the t-butoxycarbonyl, 9-fluorenylmethoxycarbonyl, and the trityl groups. Similar amino-protecting groups used in the cephalosporin, penicillin and peptide art are also embraced by the above terms. Further examples of groups referred to by the above terms are described by J. W. Barton, "Protective Groups In Organic Chemistry", J. G. W. McOmie, Ed., Plenum Press, New York, N.Y., 1973, and T. W. Greene, "Protective Groups in Organic Synthesis", John Wiley and Sons, New York, N.Y., 1981. The related term "protected amino" or "protected amino group" defines an amino group substituted with an amino-protecting group discussed above.

The term "hydroxyl protecting group" as used herein refers to substituents of the alcohol group commonly employed to block or protect the alcohol functionality while reacting other functional groups on the compound. Examples of such alcohol -protecting groups include the 2-tetrahydropyranyl group, 2-ethoxyethyl group, the trityl group, the trichloroacetyl group, urethane-type blocking groups such as benzyloxycarbonyl, and the trialkylsilyl group, examples of such being trimethylsilyl, tert-butyldimethylsilyl, phenyldimethylsilyl, triisopropylsilyl and hexyldimethylsilyl. The choice of alcohol-protecting group employed is not critical so long as the derivatized alcohol group is stable to the condition of subsequent reaction(s) on other positions of the compound of the formulae and can be removed at the desired point without disrupting the remainder of the molecule. Further examples of groups referred to by the above terms are described by J. W. Barton, "Protective Groups In Organic Chemistry", J. G. W. McOmie, Ed., Plenum Press, New York, N.Y., 1973, and T. W. Greene, "Protective Groups in Organic Synthesis", John Wiley and Sons, New York, N.Y., 1981. The related term "protected hydroxyl" or "protected alcohol" defines a hydroxyl group substituted with a hydroxyl - protecting group as discussed above.

The term "carboxyl protecting group" as used herein refers to substituents of the carboxyl group commonly employed to block or protect the -OH functionality while reacting other functional groups on the compound. Examples of such alcohol -protecting groups include the 2-tetrahydropyranyl group, 2-ethoxyethyl group, the trityl group, the allyl group, the trimethylsilylethoxymethyl group, the 2,2,2-trichloroethyl group, the

benzyl group, and the trialkylsilyl group, examples of such being trimethylsilyl, tert-butyl dimethylsilyl, phenyldimethylsilyl, triisopropylsilyl and hexyldimethylsilyl. The choice of carboxyl protecting group employed is not critical so long as the derivatized alcohol group is stable to the condition of subsequent reaction(s) on other positions of the compound of the formulae and can be removed at the desired point without disrupting the remainder of the molecule. Further examples of groups referred to by the above terms are described by J. W. Barton, "Protective Groups In Organic Chemistry", J. G. W. McOmie, Ed., Plenum Press, New York, N.Y., 1973, and T. W. Greene, "Protective Groups in Organic Synthesis", John Wiley and Sons, New York, N.Y., 1981. The related term "protected carboxyl" defines a carboxyl group substituted with a carboxyl -protecting group as discussed above.

The general procedures used in the methods of the present invention are described below.

#### General Experimental

LC-MS data was obtained using gradient elution on a Waters 600 controller equipped with a 2487 dual wavelength detector and a Leap Technologies HTS PAL Autosampler using an YMC Combiscreen ODS-A 50x4.6 mm column. A three minute gradient was run from 25% B (97.5% acetonitrile, 2.5% water, 0.05% TFA) and 75% A (97.5% water, 2.5% acetonitrile, 0.05% TFA) to 100% B. The mass spectrometer used was a Micromass ZMD instrument. All data was obtained in the positive mode unless otherwise noted. <sup>1</sup>H NMR data was obtained on a Varian 400 MHz spectrometer.

Abbreviations used in the Examples are as follows:

APCI = atmospheric pressure chemical ionization

BOC = tert-butoxycarbonyl

BOP= (1-benzotriazolyl)tris(dimethylamino)phosphonium hexafluorophosphate

d = day

DIAD = diisopropyl azodicarboxylate

DCC = dicyclohexylcarbodiimide

DCM = dichloromethane

DIC = diisopropylcarbodiimide

DIEA = diisopropylethylamine

DMA = N, N-dimethylacetamide

- DMAP = dimethylaminopyridine  
DME = 1,2 dimethoxyethane  
DMF = N, N-dimethylformamide  
DMPU = 1,3-dimethypropylene urea  
5 DMSO = dimethylsulfoxide  
EDC = 1-ethyl-3-(3-dimethylaminopropyl)-carbodiimide hydrochloride  
EDTA = ethylenediamine tetraacetic acid  
ELISA = enzyme - linked immunosorbent assay  
ESI = electrospray ionization  
10 ether = diethyl ether  
EtOAc = ethyl acetate  
FBS = fetal bovine serum  
g = gram  
h = hour  
15 HBTU= O-benzotriazol-1-yl-N,N,N',N'-tetramethyluronium hexafluorophosphate  
HMPA= hexamethylphosphoric triamide  
HOBt = 1-hydroxybenzotriazole  
Hz = hertz  
i.v. = intravenous  
20 kD = kiloDalton  
L = liter  
LAH = lithium aluminum hydride  
LDA = lithium diisopropylamide  
LPS = lipopolysaccharide  
25 M = molar  
 $m/z$  = mass to charge ratio  
mbar = millibar  
MeOH = methanol  
mg = milligram  
30 min = minute  
mL = milliliter  
mM = millimolar  
mmol = millimole  
mol = mole

- mp = melting point  
 MS = mass spectrometry  
 N = normal  
 NMM = N-methylmorpholine, 4-methylmorpholine  
 5 NMR = nuclear magnetic resonance spectroscopy  
 p.o. = per oral  
 PBS = phosphate buffered saline solution  
 PMA = phorbol myristate acetate  
 ppm = parts per million  
 10 psi = pounds per square inch  
 R<sub>f</sub> = relative TLC mobility  
 rt = room temperature  
 s.c. = subcutaneous  
 SPA = scintillation proximity assay  
 15 TEA = triethylamine  
 TFA = trifluoroacetic acid  
 THF = tetrahydrofuran  
 THP = tetrahydropyranyl  
 TLC = thin layer chromatography  
 20 TMSBr = bromotrimethylsilane, trimethylsilylbromide  
 T<sub>r</sub> = retention time

Insert new experimental

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General procedure A: Imidazole formation

- To a mixture of a carboxylic acid (1 eq) and an aromatic acyl bromide (2 eq) in anhydrous DMF (0.1-0.5 M) was added DIEA (3 eq). The reaction mixture was stirred at room temperature under nitrogen for 6 to 8 hours. After that, it was poured into water, acidified with 10% citric acid and extracted with ethyl acetate. The organic extract was washed with water and brine, dried over Na<sub>2</sub>SO<sub>4</sub>. After evaporation of the solvent, the pale-brown residue was recrystallized from EtOAc-Hexanes, dried and used directly in the next step.
- 30



The intermediate obtained above was dissolved in glacial acetic acid (0.1-0.5 M), and ammonium acetate (20 eq) was added. The mixture was then heated at 120 °C under nitrogen for 8 to 10 hours. At completion, it was poured into water, neutralized with saturated sodium bicarbonate and extracted with ethyl acetate. The organic extract  
5 was washed with water and brine, and dried over Na<sub>2</sub>SO<sub>4</sub>. After removal of the solvent *in vacuo*, the residue was purified by flash column chromatography to afford the desired product.

#### General procedure B: Boronic acid coupling

10 To a solution of the bromo compound (1 eq) in a 2:1 mixture of toluene and ethanol (0.1-0.5 M) was added the appropriate boronic acid (1.2 eq) and a catalytic amount of tetrakis(triphenylphosphine)palladium(0) (0.05 eq), followed by 2 M sodium carbonate solution in water (30 eq). The reaction mixture was stirred at 90 °C under nitrogen for 6 hours. After cooling, the reaction mixture was diluted with water and  
15 extracted with ethyl acetate. The organic extract was washed with water and brine, and dried over Na<sub>2</sub>SO<sub>4</sub>. After removal of the solvent *in vacuo*, the residue was purified by flash column chromatography to afford the desired compound.

#### General procedure C: Dealkylation

20 To the solution of alkyl phenolic ether (1 eq) in anhydrous DCM (0.1-0.5 M) at –20° C was added dropwise BBr<sub>3</sub> (2 eq, solution in anhydrous DCM). The solution was warmed to room temperature over 30 minutes, and the reaction mixture quenched with ice water. The reaction mixture was then diluted with water/EtOAc and the layers were separated. The aqueous layer was further extracted with EtOAc, and the organic layers  
25 combined, washed with water and brine, and dried over Na<sub>2</sub>SO<sub>4</sub>. The solvent was removed *in vacuo*, and the residue subjected to silica gel chromatography to yield the final product.

General procedure D: Hydrogenation of double bond

To 1 equivalent of the desired alkene suspension in ethyl acetate (0.1-0.5 M) was added a catalytic amount of platinum(IV) oxide (wet). After degassing and introducing of nitrogen and degassing again, hydrogen was introduced through a hydrogen balloon.

- 5 The reaction mixture was stirred at room temperature for 0.5 hour. The reaction mixture was then filtered through celite, the celite cake was washed three times with ethyl acetate, and the filtrates combined. The solvent was then removed *in vacuo*, and the residue was purified by silica gel chromatography to afford the desired compound.

10 General procedure E: Alkylation of imidazole nitrogen or phenolic oxygen

To a solution of imidazole or phenol (1 eq) in anhydrous DMF (0.1-0.5 M) was added an alkyl or aryl halide (2 eq) followed by freshly ground  $K_2CO_3$  (4 eq). The reaction mixture was heated at 100 °C under nitrogen for 2 hours. The mixture was then diluted with water/EtOAc and the layers separated. The aqueous layer was further  
15 extracted with EtOAc, and the organic layers combined and dried over  $Na_2SO_4$ . The solvent was removed *in vacuo* and the residue was purified by silica gel chromatography to yield the final product.

General procedure F: Hydrolysis of ester

- 20 The ester (1 eq) was suspended in a mixture of MeOH:THF:H<sub>2</sub>O (1:1:1 ; 0.1-0.2 M). LiOH (10-15 eq) was added and the mixture stirred at 40 °C for 3 hours. The solution was acidified with 10% citric acid solution, and extracted with ethyl acetate. The organic extracts were combined, washed with brine, dried over  $Na_2SO_4$ , and the solvent removed *in vacuo*. The residue was purified by silica gel chromatography to yield the  
25 final compound.

General procedure G: Coupling of carboxylic acid and amine

To a solution of carboxylic acid (1.1 eq) in DMF (0.1-0.5 M), HBTU (1.1 eq) was added followed by DIEA (1.2 eq) and the appropriate protected amine (1 eq.). The reaction mixture was then stirred at room temperature for 4 hours. At completion, the reaction mixture was diluted with water/EtOAc, acidified with 10% citric acid, and the  
5 layers were separated. The combined organic layer was washed with water, saturated  $\text{NaHCO}_3$  and brine, dried over  $\text{Na}_2\text{SO}_4$  and filtered. The filtrate was concentrated and purified by silica gel chromatography to afford the amide derivative.

General procedure H: Sonogashira coupling

10 To a solution of aryl bromide or aryl iodide (1 eq) in anhydrous DMF (0.1-0.5 M) was added the appropriate terminal acetylene (1.2 eq) followed by tetrakis (triphenylphosphine)palladium(0) (0.05 eq),  $\text{CuI}$  (0.1 eq), and DIEA (2 eq). The reaction mixture was then heated at 120 °C under nitrogen for 6-8 hours. At completion, the reaction mixture was diluted with water/EtOAc, acidified with 10% citric acid, and the  
15 layers separated. The combined organic layers was washed with water and brine, dried over  $\text{Na}_2\text{SO}_4$  and filtered. The filtrate was concentrated and purified by silica gel chromatography to afford the acetylene derivative.

General procedure I: Diaryl ether formation using aryl fluoride

20 To a solution of phenol compound (1 eq) in anhydrous DMF (0.1-0.5 M), the appropriate activated aryl fluoride (1.5 eq) was added followed by  $\text{Cs}_2\text{CO}_3$  (3 eq). The reaction mixture was then heated at 120 °C under nitrogen for 2 hours. At completion, the reaction mixture was diluted with water/EtOAc and the layers separated. The aqueous layer was reextracted with EtOAc and the organic layers combined, washed  
25 with water and brine. The organic phase was then dried over  $\text{Na}_2\text{SO}_4$ , filtered, and the filtrate was concentrated and purified by silica gel chromatography to afford the diaryl ether derivative.

General procedure J: Ullmann diaryl ether coupling

To a solution of phenol compound (1 eq) in anhydrous NMP (0.1-0.5 M), the appropriate aryl bromide or iodide (1.5 eq) was added followed by CuCl (0.2 eq), 2,2,6,6-tetramethyl-3,5-heptanedione (0.2 eq) and Cs<sub>2</sub>CO<sub>3</sub> (3 eq). The reaction mixture was then heated at 120 °C under nitrogen for 6 to 8 hours. At completion, the reaction mixture was diluted with water/EtOAc and the layers separated. The aqueous layer was reextracted with EtOAc and the organic layers combined, washed with water and brine. The organic phase was then dried over Na<sub>2</sub>SO<sub>4</sub>, filtered, and the filtrate was concentrated and purified by silica gel chromatography to afford the diaryl ether derivative.

General procedure K: Reduction of aryl nitro group

To a suspension of aryl nitro compound (1 eq) in HOAc (0.1-0.5 M), iron powder (-325 mesh, 4 eq) was added and the mixture was then heated at 120°C under nitrogen for 3 to 4 hours. At completion, the reaction mixture was diluted with water/EtOAc and the leftover iron powder was filtered and washed with EtOAc. The combined organic layer was washed with water, saturated NaHCO<sub>3</sub> and brine. The organic phase was then dried over Na<sub>2</sub>SO<sub>4</sub>, filtered, and the filtrate was concentrated and purified by silica gel chromatography to afford the aniline derivative.

General procedure L: Coupling of aniline with sulfonyl chloride or sulfonic anhydride

To a suspension of aniline compound (1 eq) in anhydrous DCM (0.1-0.5 M) at 0°C was added DIEA (1.2 eq) followed by the appropriate sulfonyl chloride or sulfonic anhydride (1.1 eq, diluted in anhydrous DCM). The reaction mixture was then warmed up and stirred at room temperature under nitrogen for 3 to 4 hours. At completion, the reaction mixture was diluted with water/EtOAc and the layers separated. The aqueous layer was reextracted with EtOAc and the organic layers combined, washed with 10% citric acid, water and brine. The organic phase was then dried over Na<sub>2</sub>SO<sub>4</sub>, filtered, and

the filtrate was concentrated and purified by silica gel chromatography to afford the sulfonamide derivative.

General procedure M: Formation of tetrazole

- 5 To a solution of phenol compound (1 eq) in anhydrous DMF (0.1-0.5 M) was added an appropriate bromoalkylnitrile (2 eq) followed by freshly ground  $K_2CO_3$  (4 eq). The reaction mixture was heated at 100°C under nitrogen for 2 hours. The mixture was then diluted with water/EtOAc and the layers separated. The aqueous layer was further extracted with EtOAc, and the organic layers combined and dried over  $Na_2SO_4$ . The solvent was removed *in vacuo* and the residue purified by silica gel chromatography to yield the nitrile intermediate.

- 15 The nitrile intermediate (1 eq) obtained above was dissolved in anhydrous DMF (0.1-0.5 M) and sodium azide (10 eq) and ammonium chloride (10 eq) were added. The reaction mixture was heated at 120°C under nitrogen for 8 to 10 hours. At completion, the reaction mixture was diluted with water/EtOAc and the layers separated. The aqueous layer was further extracted with EtOAc, and the organic layers combined and dried over  $Na_2SO_4$ . The solvent was removed *in vacuo* and the residue was purified by silica gel chromatography to afford the final product.

20 General procedure N: Protection of imidazole nitrogen

- 1 equivalent of an imidazole was suspended in anhydrous THF (0.1-0.5 M), to which was added 1.4 equivalents of TEA and 1.5 equivalents of di-*tert*-butyl-dicarbonate. The mixture was stirred for 2 hours and diluted with water and the layers were separated. The aqueous layer was further extracted with EtOAc, the organic layers combined, washed with brine, and the organic layer dried over sodium sulfate. The solvent was removed *in vacuo*, and the crude product purified by flash chromatography on silica gel to give the final product.

General procedure O: Removal of the *t*-butyl carbamate group

The protected compound was stirred in 4N HCl/dioxane for 1 hour. The solvent removed, and the product triturated several times with ether to afford the desired compound.

5

General procedure P: Alkylation.

To a solution of imidazole or phenol (1 eq) in anhydrous DMF (0.1-0.5M) was added 1-2 eq sodium hydride, either solid or as a suspension in DMF or THF. The mixture was stirred at room temperature for 20 min and a solution of alkyl or aryl halide (1-3 eq) was added in DMF or THF. Stirring continued for 1 hour, then the mixture was diluted with water/EtOAc and neutralized with 10% aqueous citric acid. The organic layer was washed with brine, dried over Na<sub>2</sub>SO<sub>4</sub>, and evaporated *in vacuo*. The residue was purified by silica gel chromatography to provide the final product.

15 General procedure Q: Benzimidazole formation

To a solution of an aldehyde (1 eq) in ethanol (0.1-0.5 M) was added 1.5 eq of a benzenediamine. The mixture was sealed in a heavy walled glass tube with stir bar and stirred at 100°C for 2 hours to overnight. The mixture was then evaporated and taken up in water/EtOAc and layers were separated. The aqueous layer was further extracted with EtOAc and the combined organic extracts were washed with brine, dried over Na<sub>2</sub>SO<sub>4</sub>, and evaporated *in vacuo*. The residue was purified by silica gel chromatography to give the product.

General procedure R: Catalytic reduction of aryl nitro group

To a solution of aryl nitro compound (1 eq) in methanol (0.1-0.5 M) was added 0.1 eq of 10% Pd/C catalyst. The flask was flushed with H<sub>2</sub> and stirred under H<sub>2</sub> pressure (balloon) overnight at room temperature. The mixture was then filtered on a celite pad and evaporated, and the residue was purified by silica gel column chromatography to provide the desired product.

30

General procedure S: Silyl group deprotection

To a solution of O- or N- silyl compound (1 eq) in THF (0.1-0.5 M) was added 5 eq of tetrabutylammonium fluoride as a solution in THF. The mixture was stirred at 65°C for 1-3 hours, then was evaporated to a small volume and taken up in water/EtOAc.

- 5 Layers were separated and the aqueous layer was further extracted with EtOAc. The combined organic extracts were washed with brine, dried over Na<sub>2</sub>SO<sub>4</sub>, and evaporated *in vacuo*. The residue was purified by silica gel column chromatography to give the desired product.

10 General procedure T: Selective trimethylsilyl group deprotection

To a solution of trimethylsilyl compound (1 eq) in anhydrous methanol (0.1-0.5 M) was added 10 eq anhydrous K<sub>2</sub>CO<sub>3</sub> under nitrogen. The mixture was stirred under nitrogen at room temperature for 3 hours, then diluted with water/EtOAc and layers were separated. The aqueous layer was further extracted with EtOAc and the combined

- 15 organic layers were washed with brine, dried over Na<sub>2</sub>SO<sub>4</sub> and evaporated *in vacuo*. The residue was purified by silica gel column chromatography to provide the desired product.

General Procedure U: Reductive Amination

20 To a solution of amine (1 eq) in 1,2-dichloroethane (0.1-0.5 M) was added an aldehyde (1.2 eq) and a catalytic amount of acetic acid. The mixture was stirred at room temperature for 30 minutes under nitrogen, then sodium triacetoxyborohydride (3 eq) was added and the mixture was allowed to stir for 12-16 hours at room temperature. The mixture was then diluted with water/EtOAc and layers were separated. The

25 aqueous layer was extracted additionally with EtOAc and the combined organic extracts were washed with water, brine, dried over Na<sub>2</sub>SO<sub>4</sub> and evaporated *in vacuo*. The residue was purified by silica gel column chromatography to provide the desired product.

General Procedure V: Saturation of Double Bond

To a suspension of double bond containing compound (1 eq) in HOAc (0.1-0.5 M) was added iron powder (-325 mesh, 10-20 eq) and the mixture was stirred and heated at 120°C for 18-24 hours. The mixture was then diluted with water/EtOAc and filtered to remove excess iron powder, then layers were separated and the aqueous layer was washed again with EtOAc. The combined organic extracts were washed with water, saturated NaHCO<sub>3</sub>, and brine, then dried over Na<sub>2</sub>SO<sub>4</sub>. After evaporation *in vacuo*, the residue was purified by silica gel column chromatography to provide the desired product.

## 10 Example 1

### 4-(2,4-Dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-1H-imidazole

*Trans*-4-methoxycinnamic acid (178 mg, 1 mmol) was treated according to general procedure A using 2,4-dichlorophenacyl bromide to give 4-(2,4-dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-1H-imidazole (193 mg, 56% yield).

15 LCMS: *m/z* 345 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz): δ 3.82 (s, 3H), 6.88 (d, 1H), 6.95 (d, 2H), 7.33 (d, 1H), 7.51 (d, 2H), 7.52 (d, 1H), 7.54 (s, 1H), 7.66 (d, 1H), 7.93 (s, 1H) ppm.

## Example 2

### 20 4-(2,4-Dichloro-phenyl)-2-[2-(3-methoxy-phenyl)-(E)-vinyl]-1H-imidazole

*Trans*-3-methoxycinnamic acid (178 mg, 1 mmol) was treated according to general procedure A using 2,4-dichlorophenacyl bromide to give 4-(2,4-dichloro-phenyl)-2-[2-(3-methoxy-phenyl)-(E)-vinyl]-1H-imidazole (176 mg, 51% yield).

25 LCMS: *m/z* 345 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz): δ 3.81 (s, 3H), 6.88 (d, 1H), 7.04 (m, 3H), 7.32 (d, 1H), 7.41 (s, 1H), 7.50 (d, 1H), 7.54 (s, 1H), 7.67 (d, 1H), 7.92 (s, 1H) ppm.



**Example 3**4-(2,4-Dichloro-phenyl)-2-[2-(2-methoxy-phenyl)-(E)-vinyl]-1H-imidazole

5 *Trans*-2-methoxycinnamic acid (178 mg, 1 mmol) was treated according to general procedure A using 2,4-dichlorophenacyl bromide to give 4-(2,4-dichloro-phenyl)-2-[2-(2-methoxy-phenyl)-(E)-vinyl]-1H-imidazole (207 mg, 60% yield).

LCMS:  $m/z$  345 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  3.82 (s, 3H), 6.88 (d, 1H), 7.04-7.15 (m, 4H), 7.32 (d, 1H), 7.50 (d, 1H), 7.54 (s, 1H), 7.67 (d, 1H), 7.93 (s, 1H) ppm.

10

**Example 4**4-(2,4-Dichloro-phenyl)-2-[2-(3,4-dimethoxy-phenyl)-(E)-vinyl]-1H-imidazole

15 *Trans*-3,4-dimethoxycinnamic acid (208 mg, 1 mmol) was treated according to general procedure A using 2,4-dichlorophenacyl bromide to give 4-(2,4-dichloro-phenyl)-2-[2-(3,4-dimethoxy-phenyl)-(E)-vinyl]-1H-imidazole (176 mg, 47% yield).

LCMS:  $m/z$  375 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  3.89 (s, 3H), 3.91 (s, 3H), 7.00 (d, 1H), 7.05 (d, 1H), 7.24-7.28 (m, 2H), 7.56 (dd, 1H), 7.66 (d, 1H), 7.69 (d, 1H), 7.75 (d, 1H), 7.89 (s, 1H) ppm.

20 **Example 5**4-(2,4-Dichloro-phenyl)-2-[2-(2,3,4-trimethoxy-phenyl)-(E)-vinyl]-1H-imidazole

*Trans*-2,3,4-trimethoxycinnamic acid (238 mg, 1 mmol) was treated according to general procedure A using 2,4-dichlorophenacyl bromide to give 4-(2,4-dichloro-phenyl)-2-[2-(2,3,4-trimethoxy-phenyl)-vinyl]-1H-imidazole (170 mg, 42% yield).

LCMS:  $m/z$  405 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  3.85 (s, 3H), 3.91 (s, 3H), 3.98 (s, 3H), 6.91 (d, 1H), 7.12 (d, 1H), 7.44 (d, 1H), 7.55 (dd, 1H), 7.69 (d, 1H), 7.74 (d, 1H), 7.87 (s, 1H), 7.92 (d, 1H) ppm.

## 5 Example 6

### 4-(2,4-Dichloro-phenyl)-2-[2-(4-ethoxy-phenyl)-(E)-vinyl]-1H-imidazole

*Trans*-4-ethoxycinnamic acid (192 mg, 1 mmol) was treated according to general procedure A using 2,4-dichlorophenacyl bromide to give 4-(2,4-dichloro-phenyl)-2-[2-(4-ethoxy-phenyl)-(E)-vinyl]-1H-imidazole (222 mg, 64% yield).

10 LCMS:  $m/z$  359 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  1.41 (t, 3H), 4.10 (q, 2H), 6.97 (d, 1H), 7.01 (d, 2H), 7.55 (dd, 1H), 7.63 (d, 2H), 7.68 (d, 1H), 7.69 (d, 1H), 7.74 (d, 1H), 7.88 (s, 1H) ppm.

## Example 7

### 15 4-(2,4-Dichloro-phenyl)-2-styryl-1H-imidazole

*Trans*-cinnamic acid (148 mg, 1 mmol) was treated according to general procedure A using 2,4-dichlorophenacyl bromide to give 4-(2,4-dichloro-phenyl)-2-styryl-1H-imidazole (202 mg, 64% yield).

20 LCMS:  $m/z$  315 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  7.13 (d, 1H), 7.49 (m, 3H), 7.68-7.73 (m, 4H), 7.77 (d, 1H), 8.03 (m, 2H) ppm.

## Example 8

### 4-(2,4-Dichloro-phenyl)-2-[2-(4-fluoro-phenyl)-(E)-vinyl]-1H-imidazole

*Trans*-4-fluorocinnamic acid (166 mg, 1 mmol) was treated according to general procedure A using 2,4-dichlorophenacyl bromide to give 4-(2,4-dichloro-phenyl)-2-[2-(4-fluoro-phenyl)-(E)-vinyl]-1H-imidazole (236 mg, 71% yield).

LCMS:  $m/z$  333 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  7.12 (d, 1H), 7.51 (d, 2H), 7.68 (d, 2H), 7.70 (m, 2H), 7.72 (d, 1H), 8.03 (m, 1H), 8.04 (s, 1H) ppm.

### Example 9

#### 2-[2-(4-Chloro-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole

*Trans*-4-chlorocinnamic acid (182 mg, 1 mmol) was treated according to general procedure A using 2,4-dichlorophenacyl bromide to give 2-[2-(4-chloro-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (227 mg, 65% yield).

LCMS:  $m/z$  349 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  7.14 (d, 1H), 7.52 (d, 2H), 7.69 (d, 2H), 7.72-7.73 (m, 2H), 7.74 (d, 1H), 8.03 (m, 1H), 8.05 (s, 1H) ppm.

### Example 10

#### 2-[2-(4-Bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole

*Trans*-4-bromocinnamic acid (2.27 g, 10 mmol) was treated according to general procedure A using 2,4-dichlorophenacyl bromide to give 2-[2-(4-bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (2.24 g, 57% yield).

LCMS:  $m/z$  394 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  7.14 (d, 1H), 7.51 (d, 2H), 7.69 (d, 2H), 7.71 (m, 2H), 7.74 (d, 1H), 8.02 (m, 1H), 8.04 (s, 1H) ppm.

### Example 11

#### 2-(2-Biphenyl-4-yl)-(E)-vinyl)-4-(2,4-dichloro-phenyl)-1H-imidazole

*Trans*-4-phenylcinnamic acid (224 mg, 1 mmol) was treated according to general procedure A using 2,4-dichlorophenacyl bromide to give 2-(2-biphenyl-4-yl-(E)-vinyl)-4-(2,4-dichloro-phenyl)-1H-imidazole (227 mg, 58% yield).

LCMS:  $m/z$  391 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz):  $\delta$  6.94 (d, 1H), 7.31-7.39 (m, 2H), 7.43-7.48 (m, 3H), 7.61-7.64 (m, 6H), 7.66 (s, 1H), 7.74 (d, 1H), 8.26 (d, 1H) ppm.

### Example 12

#### 4-(2,4-Dichloro-phenyl)-2-(2-naphthalen-1-yl-(E)-vinyl)-1H-imidazole

*Trans*-3-(1-naphthyl)acrylic acid (198 mg, 1 mmol) was treated according to general procedure A using 2,4-dichlorophenacyl bromide to give 4-(2,4-dichloro-phenyl)-2-(2-naphthalen-1-yl-(E)-vinyl)-1H-imidazole (201 mg, 55% yield).

LCMS:  $m/z$  365 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  7.25 (d, 1H), 7.58-7.69 (m, 4H), 7.75 (d, 1H), 7.78 (d, 1H), 7.97-8.04 (m, 4H), 8.35 (d, 1H), 8.70 (d, 1H) ppm.

### Example 13

#### 4-(2,4-Dichloro-phenyl)-2-(2-naphthalen-2-yl-(E)-vinyl)-1H-imidazole

*Trans*-3-(2-naphthyl) acrylic acid (198 mg, 1 mmol) was treated according to general procedure A using 2,4-dichlorophenacyl bromide to give 4-(2,4-dichloro-phenyl)-2-(2-naphthalen-2-yl-(E)-vinyl)-1H-imidazole (248 mg, 68% yield).

LCMS:  $m/z$  365 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  7.27 (d, 1H), 7.57-7.69 (m, 4H), 7.75 (d, 1H), 7.76 (d, 1H), 7.96-8.02 (m, 4H), 8.33 (d, 1H), 8.71 (d, 1H) ppm.

### Example 14

#### 4-[4-(2,4-Dichloro-phenyl)-1H-imidazol-2-yl]-5-phenyl-oxazole

5-Phenyl-1,3-oxazole-4-carboxylic acid (189 mg, 1 mmol) was treated according to general procedure A using 2,4-dichlorophenacyl bromide to give 4-[4-(2,4-dichlorophenyl)-1H-imidazol-2-yl]-5-phenyl-oxazole (135 mg, 38% yield).

LCMS:  $m/z$  356 (M+H)<sup>+</sup>.

5

### Example 15

#### 2-[2-(4-Benzyloxy-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole

10 *Trans*-4-benzyloxycinnamic acid (254 mg, 1 mmol) was treated according to general procedure A using 2,4-dichlorophenacyl bromide to give 2-[2-(4-benzyloxyphenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (185 mg, 44% yield).

LCMS:  $m/z$  421 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  5.16 (s, 2H), 7.48 (d, 2H), 7.51 (s, 5H), 7.61 (d, 2H), 7.65 (d, 2H), 7.69 (d, 2H), 7.74 (s, 1H), 7.81 (d, 1H) ppm.

### Example 16

#### 15 4-(2,4-Dichloro-phenyl)-2-fluoren-9-ylidenemethyl-1H-imidazole

9-Fluorenylideneacetic acid (222 mg, 1 mmol) was treated according to general procedure A using 2,4-dichlorophenacyl bromide to give 4-(2,4-dichloro-phenyl)-2-fluoren-9-ylidenemethyl-1H-imidazole (245 mg, 63% yield).

20 LCMS:  $m/z$  389 (M+H)<sup>+</sup>. <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  7.25 (m, 1H), 7.37-7.51 (m, 5H), 7.57 (dd, 1H), 7.73 (d, 1H), 7.77-7.82 (m, 3H), 7.93 (d, 1H), 8.08 (s, 1H) ppm.

### Example 17

#### 1-Butyl-4-(2,4-dichloro-phenyl)-2-fluoren-9-ylidenemethyl-1H-imidazole

4-(2,4-Dichloro-phenyl)-2-fluoren-9-ylidenemethyl-1H-imidazole (39 mg, 0.1 mmol) was treated according to general procedure E using 1-bromobutane to give 1-butyl-4-(2,4-dichloro-phenyl)-2-fluoren-9-ylidenemethyl-1H-imidazole (35 mg, 78% yield).

LCMS:  $m/z$  445 (M+H)<sup>+</sup>.

5

### Example 18

#### 4-(2,4-Dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-oxazole

10 *Trans*-4-methoxycinnamic acid (178 mg, 1 mmol) was treated according to general procedure A using 2,4-dichlorophenacyl bromide to afford 4-(2,4-dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-oxazole as a less polar by-product (38 mg, 11% yield) along with 4-(2,4-dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-1H-imidazole (193 mg, 56% yield).

15 LCMS:  $m/z$  346 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  3.81 (s, 3H), 6.89 (d, 1H), 6.95 (d, 2H), 7.34 (d, 1H), 7.51 (d, 2H), 7.52 (d, 1H), 7.58 (s, 1H), 7.67 (d, 1H), 7.94 (s, 1H) ppm.

### Example 19

#### 4-(2,4-Dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-1H-imidazole

20 2-[2-(4-Bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (40 mg, 0.1 mmol) was treated as described in general procedure B using 4-methoxyphenylboronic acid to give 4-(2,4-dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-1H-imidazole (30 mg, 72% yield).

25 LCMS:  $m/z$  421 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  3.82 (s, 3H), 7.03 (d, 2H), 7.15 (d, 1H), 7.54 (dd, 1H), 7.62 (d, 2H), 7.70 (s, 1H), 7.71 (m, 5H), 7.73 (d, 1H), 7.91 (s, 1H) ppm.

### Example 20

4-(2,4-Dichloro-phenyl)-2-[2-(3'-methoxy-biphenyl-4-yl)-(E)-vinyl]-1H-imidazole

2-[2-(4-Bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (40 mg, 0.1 mmol) was treated as described in general procedure B using 3-methoxyphenylboronic acid to give 4-(2,4-dichloro-phenyl)-2-[2-(3'-methoxy-biphenyl-4-yl)-(E)-vinyl]-1H-imidazole (28 mg, 67% yield).

LCMS:  $m/z$  421 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  3.81 (s, 3H), 7.03 (d, 2H), 7.15 (d, 1H), 7.58-7.61 (m, 3H), 7.68-7.70 (m, 6H), 7.73 (d, 1H), 7.90 (s, 1H) ppm.

**Example 21**10 4-(2,4-Dichloro-phenyl)-2-[2-(2'-methoxy-biphenyl-4-yl)-(E)-vinyl]-1H-imidazole

2-[2-(4-bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (40 mg, 0.1 mmol) was treated as described in general procedure B using 2-methoxyphenylboronic acid to give 4-(2,4-dichloro-phenyl)-2-[2-(2'-methoxy-biphenyl-4-yl)-(E)-vinyl]-1H-imidazole (24 mg, 57% yield).

15 LCMS:  $m/z$  421 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  3.83 (s, 3H), 7.03 (d, 2H), 7.15 (d, 1H), 7.55-7.60 (m, 3H), 7.66-7.71 (m, 6H), 7.73 (d, 1H), 7.92 (s, 1H) ppm.

**Example 22**4-(2,4-Dichloro-phenyl)-2-[2-(3',4'-dimethoxy-biphenyl-4-yl)-(E)-vinyl]-1H-imidazole

20 2-[2-(4-Bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (40 mg, 0.1 mmol) was treated as described in general procedure B using 3,4-dimethoxyphenylboronic acid to give 4-(2,4-dichloro-phenyl)-2-[2-(3',4'-dimethoxy-biphenyl-4-yl)-(E)-vinyl]-1H-imidazole (24 mg, 54% yield).

25 LCMS:  $m/z$  451 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  3.84 (s, 3H), 3.87 (s, 3H), 7.03 (d, 2H), 7.15 (d, 1H), 7.58-7.61 (m, 3H), 7.68-7.71 (m, 5H), 7.73 (d, 1H), 7.90 (s, 1H) ppm.

**Example 23**4-(2,4-Dichloro-phenyl)-2-[2-(2',4'-dimethoxy-biphenyl-4-yl)-(E)-vinyl]-1H-imidazole

2-[2-(4-Bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (40 mg,  
5 0.1 mmol) was treated as described in general procedure B using 2,4-dimethoxyphenylboronic acid to give 4-(2,4-dichloro-phenyl)-2-[2-(2',4'-dimethoxy-biphenyl-4-yl)-(E)-vinyl]-1H-imidazole (22 mg, 49% yield).

LCMS:  $m/z$  451 (M+H)<sup>+</sup>.

**10 Example 24**2-[2-(4'-Butoxy-biphenyl-4-yl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole

2-[2-(4-Bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (40 mg,  
0.1 mmol) was treated as described in general procedure B using 4-n-butoxyphenylboronic acid to give 2-[2-(4'-butoxy-biphenyl-4-yl)-(E)-vinyl]-4-(2,4-dichloro-  
15 phenyl)-1H-imidazole (24 mg, 52% yield).

LCMS:  $m/z$  463 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  1.15 (t, 3H), 1.43 (m, 2H), 1.84 (m, 2H), 4.18 (t, 2H), 7.03 (d, 2H), 7.15 (d, 1H), 7.54 (dd, 1H), 7.62 (d, 2H), 7.70 (s, 1H), 7.71 (m, 5H), 7.73 (d, 1H), 7.91 (s, 1H) ppm.

**20 Example 25**4-(2,4-Dichloro-phenyl)-2-[2-(4'-phenoxy-biphenyl-4-yl)-(E)-vinyl]-1H-imidazole

2-[2-(4-Bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (39 mg,  
0.1 mmol) was treated with 4-phenoxyphenyl boronic acid as described in general  
procedure B to give 4-(2,4-dichloro-phenyl)-2-[2-(4'-phenoxy-biphenyl-4-yl)-(E)-vinyl]-1H-  
25 imidazole (30 mg, 63% yield).



LCMS:  $m/z$  483 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz):  $\delta$  7.03 (d, 1H), 7.06 (d, 1H), 7.08 (m, 3H), 7.15 (d, 1H), 7.35 (m, 2H), 7.37 (d, 1H), 7.45 (s, 1H), 7.58 (m, 7H), 7.78 (s, 1H), 8.20 (d, 1H), 9.38 (bs, 1H) ppm.

## 5 Example 26

### 2-[2-(4'-Benzyloxy-biphenyl-4-yl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole

2-[2-(4-Bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (39 mg, 0.1 mmol) was treated with 4-benzyloxy benzene boronic acid as described in general procedure B to give 2-[2-(4'-benzyloxy-biphenyl-4-yl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-  
10 1H-imidazole (39 mg, 78% yield).

LCMS:  $m/z$  497 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  5.16 (s, 2H), 7.10 (d, 1H), 7.12 (d, 1H), 7.42 (m, 2H), 7.48 (d, 2H), 7.51 (s, 5H), 7.61 (d, 2H), 7.65 (d, 2H), 7.69 (d, 2H), 7.74 (s, 1H), 7.81 (d, 1H) ppm.

## 15 Example 27

### 2-[2-(4'-Benzyloxy-3'-fluoro-biphenyl-4-yl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole

2-[2-(4-Bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (40 mg, 0.1 mmol) was treated as described in general procedure B using 4-benzyloxy-3-fluorobenzeneboronic acid to give 2-[2-(4'-benzyloxy-3'-fluoro-biphenyl-4-yl)-(E)-vinyl]-4-(  
20 (2,4-dichloro-phenyl)-1H-imidazole (36 mg, 71% yield).

LCMS:  $m/z$  515 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  5.22 (s, 2H), 7.13 (d, 1H), 7.20 (t, 1H), 7.38-7.49 (m, 6H), 7.54 (m, 1H), 7.66 (d, 1H), 7.69-7.72 (m, 5H), 7.74 (s, 1H), 7.75 (d, 1H), 7.86 (s, 1H) ppm.

## 25 Example 28

4-(2,4-Dichloro-phenyl)-2-{2-[4-(2,3-dihydro-benzo[1,4]dioxin-6-yl)-phenyl]-(E)-vinyl}-1H-imidazole

2-[2-(4-Bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (40 mg, 0.1 mmol) was treated as described in general procedure B using 2,3-dihydro-1,4-benzodioxin-6-ylboronic acid to give 4-(2,4-dichloro-phenyl)-2-{2-[4-(2,3-dihydro-benzo[1,4]dioxin-6-yl)-phenyl]-(E)-vinyl}-1H-imidazole (27 mg, 61% yield).

LCMS:  $m/z$  449 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  4.28 (s, 4H), 6.91 (d, 1H), 7.12 (d, 1H), 7.15 (m, 2H), 7.51 (m, 1H), 7.62 (d, 1H), 7.64-7.70 (m, 6H), 7.78 (d, 1H) ppm.

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**Example 29**

4-(2,4-Dichloro-phenyl)-2-[2-(4'-methoxy-3',5'-dimethyl-biphenyl-4-yl)-(E)-vinyl]-1H-imidazole

2-[2-(4-Bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (40 mg, 0.1 mmol) was treated as described in general procedure B using 4-methoxy-3,5-dimethylbenzeneboronic acid to give 4-(2,4-dichloro-phenyl)-2-[2-(4'-methoxy-3',5'-dimethyl-biphenyl-4-yl)-(E)-vinyl]-1H-imidazole (28 mg, 63% yield).

LCMS:  $m/z$  449 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz):  $\delta$  2.36 (s, 6H), 3.77 (s, 3H), 7.13 (d, 1H), 7.54 (m, 1H), 7.67 (d, 1H), 7.70-7.73 (m, 5H), 7.76 (d, 1H), 7.78 (s, 2H), 7.87 (s, 1H) ppm.

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**Example 30**

4-(2,4-Dichloro-phenyl)-2-[2-(4'-ethoxy-biphenyl-4-yl)-(E)-vinyl]-1H-imidazole

2-[2-(4-Bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (40 mg, 0.1 mmol) was treated as described in general procedure B using 4-

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ethoxybenzeneboronic acid to give 4-(2,4-dichloro-phenyl)-2-[2-(4'-ethoxy-biphenyl-4-yl)-(E)-vinyl]-1H-imidazole (29 mg, 68% yield).

LCMS:  $m/z$  435 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz):  $\delta$  1.57 (t, 3H), 4.30 (q, 2H), 6.93 (d, 1H), 6.97 (d, 2H), 7.45 (d, 1H), 7.50-7.56 (m, 6H), 7.75 (d, 2H), 8.59 (d, 1H), 8.94 (d, 1H) ppm.

### Example 31

#### 4-(2,4-Dichloro-phenyl)-2-[2-(4'-trifluoromethoxy-biphenyl-4-yl)-(E)-vinyl]-1H-imidazole

2-[2-(4-Bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (40 mg, 0.1 mmol) was treated as described in general procedure B using 4-trifluoromethoxyphenyl boronic acid to give 4-(2,4-dichloro-phenyl)-2-[2-(4'-trifluoromethoxy-biphenyl-4-yl)-(E)-vinyl]-1H-imidazole (20 mg, 42% yield).

LCMS:  $m/z$  475 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  7.03 (d, 2H), 7.15 (d, 1H), 7.54 (dd, 1H), 7.62 (d, 2H), 7.68-7.71 (m, 6H), 7.73 (d, 1H), 7.91 (s, 1H) ppm.

### Example 32

#### 4-(2,4-Dichloro-phenyl)-2-[2-(3'-trifluoromethoxy-biphenyl-4-yl)-(E)-vinyl]-1H-imidazole

2-[2-(4-Bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (40 mg, 0.1 mmol) was treated as described in general procedure B using 3-trifluoromethoxyphenylboronic acid to give 4-(2,4-dichloro-phenyl)-2-[2-(3'-trifluoromethoxy-biphenyl-4-yl)-(E)-vinyl]-1H-imidazole (23 mg, 48% yield).

LCMS:  $m/z$  475 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  7.04 (d, 2H), 7.15 (d, 1H), 7.54 (dd, 1H), 7.62 (d, 2H), 7.68-7.74 (m, 7H), 7.92 (s, 1H) ppm.

### Example 33

2-[2-(4-Benzofuran-2-yl-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole

2-[2-(4-Bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (40 mg, 0.1 mmol) was treated as described in general procedure B using benzo[B]furan-2-boronic acid to give 2-[2-(4-benzofuran-2-yl-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (15 mg, 34% yield).

LCMS:  $m/z$  431 (M+H)<sup>+</sup>.

**Example 34**2-[2-(5'-Chloro-2'-methoxy-biphenyl-4-yl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole

2-[2-(4-Bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (40 mg, 0.1 mmol) was treated as described in general procedure B using 5-chloro-2-methoxyphenylboronic acid to give 2-[2-(5'-chloro-2'-methoxy-biphenyl-4-yl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (22 mg, 47% yield).

LCMS:  $m/z$  455 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  3.81 (s, 3H), 7.03 (d, 2H), 7.15 (d, 1H), 7.58-7.61 (m, 3H), 7.68-7.70 (m, 5H), 7.73 (d, 1H), 7.90 (s, 1H) ppm.

**Example 35**2-[2-(4'-tert-Butyl-biphenyl-4-yl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole

2-[2-(4-Bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (40 mg, 0.1 mmol) was treated as described in general procedure B using 4-tert-butylbenzeneboronic acid to give 2-[2-(4'-tert-butyl-biphenyl-4-yl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (19 mg, 42% yield).

LCMS:  $m/z$  447 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  1.22 (s 9H), 7.03 (d, 2H), 7.15 (d, 1H), 7.54 (dd, 1H), 7.62 (d, 2H), 7.68-7.71 (m, 6H), 7.73 (d, 1H), 7.92 (s, 1H) ppm.

**Example 36**3-(4'-(2-[4-(2,4-Dichloro-phenyl)-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yl)-acrylic acid

2-[2-(4-Bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (79 mg,  
5 0.2 mmol) was treated as described in general procedure B using 4-(2-carboxy(E)-vinyl)benzene boronic acid to give 3-(4'-(2-[4-(2,4-dichloro-phenyl)-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yl)-acrylic acid (21 mg, 22% yield).

LCMS:  $m/z$  461 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  6.53 (d, 1H), 7.14 (d, 1H), 7.54 (dd, 1H), 7.62 (d, 1H), 7.68-7.79 (m, 10H), 7.89 (d, 1H), 7.94 (s, 1H) ppm.

**Example 37**4-(2,4-Dichloro-phenyl)-2-{2-[4-(4-methoxy-phenylethynyl)-phenyl]-(E)-vinyl}-1H-imidazole

2-[2-(4-Bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (40 mg,  
15 0.1 mmol) was treated as described in general procedure H using 1-ethynyl-4-methoxybenzene to give 4-(2,4-dichloro-phenyl)-2-{2-[4-(4-methoxy-phenylethynyl)-phenyl]-(E)-vinyl}-1H-imidazole (23 mg, 51% yield).

LCMS:  $m/z$  445 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  3.81 (s, 3H), 7.03 (d, 2H), 7.15 (d, 1H), 7.58-7.61 (m, 3H), 7.68-7.70 (m, 6H), 7.73 (d, 1H), 7.90 (s, 1H) ppm.

**Example 38**5-(4-(2-[4-(2,4-Dichloro-phenyl)-1H-imidazol-2-yl]-(E)-vinyl)-phenyl)-pent-4-ynoic acid

2-[2-(4-Bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (40 mg,  
25 0.1 mmol) was treated as described in general procedure H using 4-pentynoic acid methyl ester followed by ester hydrolysis as described in general procedure F to give 5-

TTP 2002-08

(4-{2-[4-(2,4-dichloro-phenyl)-1H-imidazol-2-yl]-(E)-vinyl}-phenyl)-pent-4-ynoic acid (12 mg, 29% yield).

LCMS:  $m/z$  411 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  2.53 (m, 2H), 2.64 (m, 2H), 7.03 (d, 2H), 7.15 (d, 1H), 7.58-7.61 (m, 3H), 7.68 (m, 2H), 7.73 (d, 1H), 7.90 (s, 1H) ppm.

### Example 39

#### 4'-{2-[4-(2,4-Dichloro-phenyl)-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-carboxylic acid

2-[2-(4-Bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (394 mg, 1 mmol) was treated as described in general procedure B using 4-carboxybenzeneboronic acid to give 4'-{2-[4-(2,4-dichloro-phenyl)-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-carboxylic acid (105 mg, 24% yield).

LCMS:  $m/z$  435 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  7.03 (d, 2H), 7.15 (d, 1H), 7.54 (dd, 1H), 7.62 (d, 2H), 7.68-7.71 (m, 6H), 7.73 (d, 1H), 7.92 (s, 1H) ppm.

### Example 40

#### 4'-{[(4'-{2-[4-(2,4-Dichloro-phenyl)-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-carbonyl)-amino]-methyl}-benzoic acid

4'-{2-[4-(2,4-Dichloro-phenyl)-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-carboxylic acid (44 mg, 0.1 mmol) was treated as described in general procedure G using methyl 4-(aminomethyl)benzoate hydrochloride followed by ester hydrolysis as described in general procedure F to give 4'-{[(4'-{2-[4-(2,4-dichloro-phenyl)-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-carbonyl)-amino]-methyl}-benzoic acid (25 mg, 44% yield).

LCMS:  $m/z$  568 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  5.03 (d, 2H), 7.03 (d, 2H), 7.15 (d, 1H), 7.23 (d, 2H), 7.35 (d, 2H), 7.54 (dd, 1H), 7.62 (d, 2H), 7.68-7.71 (m, 6H), 7.73 (d, 1H), 7.92 (s, 1H) ppm.

**Example 41**4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-carboxylic acid

5            2-[2-(4-Bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazole (44 mg, 0.1 mmol) was treated as described in general procedure B using 4-carboxybenzeneboronic acid to give 4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-carboxylic acid (29 mg, 63% yield).

LCMS:  $m/z$  463 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  1.45 (t, 2H), 4.28 (q, 2H),  
10    7.03 (d, 2H), 7.15 (d, 1H), 7.54 (dd, 1H), 7.62 (d, 2H), 7.68-7.71 (m, 6H), 7.73 (d, 1H), 7.92 (s, 1H) ppm.

**Example 42**

15    2-[2-(4'-Benzyloxy-3'-fluoro-biphenyl-4-yl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazole

2-[2-(4'-Benzyloxy-3'-fluoro-biphenyl-4-yl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (52 mg, 0.1 mmol) was treated as described in general procedure E using ethyl bromide to give 2-[2-(4'-benzyloxy-3'-fluoro-biphenyl-4-yl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazole (39 mg, 71% yield).

20            LCMS:  $m/z$  543 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  1.46 (t, 3H), 4.30 (q, 2H), 5.22 (s, 2H), 7.13 (d, 1H), 7.20 (t, 1H), 7.38-7.49 (m, 6H), 7.54 (m, 1H), 7.66 (d, 1H), 7.69-7.72 (m, 5H), 7.74 (s, 1H), 7.75 (d, 1H), 7.86 (s, 1H) ppm.

**Example 43**

25    4-(4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-3-fluoro-biphenyl-4-yloxymethyl)-benzoic acid

2-[2-(4'-Benzyloxy-3'-fluoro-biphenyl-4-yl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazole (55 mg, 0.1 mmol) was treated as described in general procedure C and the resulting phenol was treated with methyl 4-(bromomethyl)benzoate as described in the general procedure E followed by ester hydrolysis as described in the general  
5 procedure F to give 4-(4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-3-fluoro-biphenyl-4-yloxymethyl)-benzoic acid (18 mg, 31% yield).

LCMS:  $m/z$  587 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  1.46 (t, 3H), 4.30 (q, 2H), 5.22 (s, 2H), 7.13 (d, 1H), 7.20 (t, 1H), 7.38-7.49 (m, 5H), 7.54 (m, 1H), 7.66 (d, 1H), 7.69-7.72 (m, 5H), 7.74 (s, 1H), 7.75 (d, 1H), 7.86 (s, 1H) ppm.

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#### Example 44

##### 4-{2-[4-(2,4-Dichloro-phenyl)-1H-imidazol-2-yl]-(E)-vinyl}-phenol

4-(2,4-Dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-1H-imidazole (34 mg, 0.1 mmol) was treated as described in general procedure C to give 4-{2-[4-(2,4-dichloro-phenyl)-1H-imidazol-2-yl]-(E)-vinyl}-phenol (20 mg, 61% yield).  
15

LCMS:  $m/z$  331 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  6.88 (d, 1H), 6.95 (d, 2H), 7.33 (d, 1H), 7.51 (d, 2H), 7.52 (d, 1H), 7.54 (s, 1H), 7.66 (d, 1H), 7.93 (s, 1H) ppm.

#### Example 45

##### 4-(2,4-Dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-ethyl]-1H-imidazole

  
20

4-(2,4-Dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-1H-imidazole (34 mg, 0.1 mmol) was treated as described in general procedure D to give 4-(2,4-dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-ethyl]-1H-imidazole (17 mg, 51% yield).

LCMS:  $m/z$  347 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  3.00 (s, 4H), 3.77 (s, 3H),  
25 6.82 (d, 2H), 7.10 (d, 2H), 7.32 (m, 1H), 7.46 (m, 2H), 7.74 (s, 1H) ppm.



**Example 46**4-(2,4-Dichloro-phenyl)-1-ethyl-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-1H-imidazole

4-(2,4-Dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-1H-imidazole (34 mg, 0.1 mmol) was treated with ethyl bromide as described in general procedure E to give 4-(2,4-dichloro-phenyl)-1-ethyl-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-1H-imidazole (32 mg, 84% yield).

LCMS:  $m/z$  373 (M+H)<sup>+</sup>.

**Example 47**

10 4-(4-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-phenoxy)methyl)-benzoic acid

4-(2,4-Dichloro-phenyl)-1-ethyl-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-1H-imidazole (38 mg, 0.1 mmol) was treated as described in general procedure C and the resulting phenol was treated with methyl 4-(bromomethyl)benzoate as described in the general procedure E followed by ester hydrolysis as described in the general procedure F to give 4-(4-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-phenoxy)methyl)-benzoic acid (17 mg, 34% yield)

LCMS:  $m/z$  493 (M+H)<sup>+</sup>.

20 **Example 48**

3-(4-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-phenoxy)methyl)-benzoic acid

4-(2,4-Dichloro-phenyl)-1-ethyl-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-1H-imidazole (38 mg, 0.1 mmol) was treated as described in general procedure C and the resulting phenol was treated with methyl 3-(bromomethyl)benzoate as described in the general procedure E followed by ester hydrolysis as described in the general procedure F to give

3-(4-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-phenoxy-methyl)-benzoic acid (15 mg, 30% yield)

LCMS:  $m/z$  493 (M+H)<sup>+</sup>.

## 5 Example 49

### 4-(4-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-phenoxy)-butyric acid

4-(2,4-Dichloro-phenyl)-1-ethyl-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-1H-imidazole (38 mg, 0.1 mmol) was treated as described in general procedure C and the resulting phenol was treated with methyl 4-bromobutyrate as described in the general procedure E followed by ester hydrolysis as described in the general procedure F to give 4-(4-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-phenoxy)-butyric acid (15 mg, 33% yield).

LCMS:  $m/z$  445 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz):  $\delta$  1.21 (t, 3H), 2.15 (m, 2H), 2.56 (t, 2H), 3.94 (q, 2H), 4.06 (t, 2H), 6.95 (d, 1H), 6.97 (d, 2H), 7.30 (m, 1H), 7.42 (d, 1H), 7.55 (m, 2H), 7.71 (s, 1H), 7.73 (d, 1H), 8.25 (d, 1H) ppm.

## Example 50

### 6-(4-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-phenoxy)-hexanoic acid

4-(2,4-Dichloro-phenyl)-1-ethyl-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-1H-imidazole (38 mg, 0.1 mmol) was treated as described in general procedure C and the resulting phenol was treated with ethyl 6-bromohexanoate as described in the general procedure E followed by ester hydrolysis as described in the general procedure F to give 6-(4-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-phenoxy)-hexanoic acid (18 mg, 38% yield).

LCMS:  $m/z$  473 (M+H)<sup>+</sup>.

**Exempl 51**1-Butyl-4-(2,4-dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-1H-imidazole

5 4-(2,4-Dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-1H-imidazole (34 mg, 0.1 mmol) was treated with 1-bromobutane as described in general procedure E to give 1-butyl-4-(2,4-dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-1H-imidazole (32 mg, 81% yield)

LCMS:  $m/z$  401 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  1.01 (t, 3H), 1.46 (m, 2H), 1.90 (m, 2H), 3.87 (s, 3H), 4.31 (t, 2H), 7.04 (d, 2H), 7.16 (d, 1H), 7.71-7.74 (m, 4H), 7.78 (d, 1H), 8.05 (m, 2H) ppm.

**Example 52**4-(2,4-Dichloro-phenyl)-1-isobutyl-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-1H-imidazole

15 4-(2,4-Dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-1H-imidazole (34 mg, 0.1 mmol) was treated with isobutyl bromide as described in general procedure E to give 4-(2,4-dichloro-phenyl)-1-isobutyl-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-1H-imidazole (29 mg, 72% yield).

LCMS:  $m/z$  401 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  1.03 (d, 6H), 1.87 (m, 1H), 3.87 (s, 3H), 4.24 (d, 2H), 7.04 (d, 2H), 7.16 (d, 1H), 7.71-7.74 (m, 4H), 7.78 (d, 1H), 8.05 (m, 2H) ppm.

**Example 53**2-[2-(4-Butoxy-phenyl)-(E)-vinyl]-1-butyl-4-(2,4-dichloro-phenyl)-1H-imidazole

25 4-{2-[4-(2,4-Dichloro-phenyl)-1H-imidazol-2-yl]-(E)-vinyl}-phenol (33 mg, 0.1 mmol) was treated with 1-bromobutane as described in general procedure E to give 2-[2-

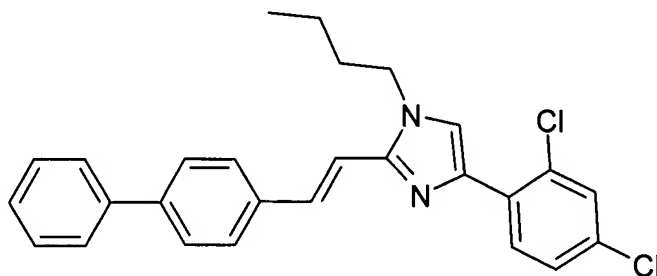
TTP 2002-08

(4-butoxy-phenyl)-(E)-vinyl]-1-butyl-4-(2,4-dichloro-phenyl)-1H-imidazole (34 mg, 76% yield)

LCMS:  $m/z$  443 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz):  $\delta$  1.02 (dt, 6H), 1.43 (m, 4H), 1.88 (m, 4H), 4.08 (t, 2H), 4.34 (t, 2H), 7.04 (d, 2H), 7.16 (d, 1H), 7.71-7.74 (m, 4H), 7.78 (d, 1H), 8.05 (m, 2H) ppm.

### Example 54

2-(2-Biphenyl-4-yl-(E)-vinyl)-1-butyl-4-(2,4-dichloro-phenyl)-1H-imidazole

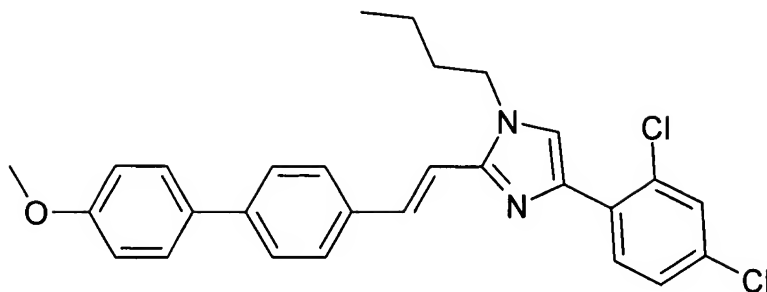


2-(2-Biphenyl-4-yl-(E)-vinyl)-4-(2,4-dichloro-phenyl)-1H-imidazole (20 mg, 0.05 mmol) was treated with 1-bromobutane as described in general procedure E to give 2-(2-biphenyl-4-yl-(E)-vinyl)-1-butyl-4-(2,4-dichloro-phenyl)-1H-imidazole (16 mg, 73% yield)

LCMS:  $m/z$  447 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz):  $\delta$  1.00 (t, 3H), 1.43 (m, 2H), 1.84 (m, 2H), 4.08 (t, 2H), 6.94 (d, 1H), 7.31-7.39 (m, 2H), 7.43-7.48 (m, 3H), 7.61-7.64 (m, 6H), 7.66 (s, 1H), 7.74 (d, 1H), 8.26 (d, 1H) ppm.

### Example 55

1-Butyl-4-(2,4-dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-1H-imidazole



4-(2,4-Dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-1H-imidazole  
(21 mg, 0.05 mmol) was treated with 1-bromobutane as described in general procedure  
5 E to give 1-butyl-4-(2,4-dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-1H-  
imidazole (18 mg, 76% yield).

LCMS:  $m/z$  477 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz):  $\delta$  1.00 (t, 3H), 1.43 (m, 2H),  
1.84 (m, 2H), 3.85 (s, 3H), 4.08 (t, 2H), 6.90 (d, 1H), 7.00 (d, 2H), 7.32 (dd, 1H), 7.42 (d,  
1H), 7.55-7.61 (m, 6H), 7.63 (s, 1H), 7.74 (d, 1H), 8.26 (d, 1H) ppm.

10

### Example 56

#### 4-(2,4-Dichloro-phenyl)-1-isobutyl-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-1H-imidazole

4-(2,4-Dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-1H-imidazole  
(21 mg, 0.05 mmol) was treated with isobutyl bromide as described in general procedure  
15 E to give 4-(2,4-dichloro-phenyl)-1-isobutyl-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-1H-  
imidazole (15 mg, 62% yield).

LCMS:  $m/z$  477 ( $M+H$ )<sup>+</sup>.

### Example 57

20 4-(2,4-Dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-1-propyl-1H-imidazole

4-(2,4-Dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-1H-imidazole (21 mg, 0.05 mmol) was treated with 1-bromopropane as described in general procedure E to give 4-(2,4-dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-1-propyl-1H-imidazole (16 mg, 68% yield).

5 LCMS:  $m/z$  463 (M+H)<sup>+</sup>.

### Example 58

#### 4-(2,4-Dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-1-methyl-1H-imidazole

10 4-(2,4-Dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-1H-imidazole (42 mg, 0.1 mmol) was treated with methyl iodide as described in general procedure E to give 4-(2,4-dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-1-methyl-1H-imidazole (18 mg, 76% yield).

15 LCMS:  $m/z$  435 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz):  $\delta$  3.81 (s, 3H), 3.86 (s, 3H), 6.90 (d, 1H), 7.00 (d, 2H), 7.32 (dd, 1H), 7.42 (d, 1H), 7.55-7.61 (m, 6H), 7.63 (s, 1H), 7.74 (d, 1H), 8.26 (d, 1H) ppm.

### Example 59

#### 1-Benzyl-4-(2,4-dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-1H-imidazole

20 4-(2,4-Dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-1H-imidazole (42 mg, 0.1 mmol) was treated with benzyl bromide as described in general procedure E to give 1-benzyl-4-(2,4-dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-1H-imidazole (32 mg, 63% yield).

25 LCMS:  $m/z$  511 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  3.83 (s, 3H), 5.36 (s, 2H), 7.10 (d, 1H), 7.12 (d, 1H), 7.42 (m, 2H), 7.48 (d, 2H), 7.51 (m, 5H), 7.61 (d, 2H), 7.65 (d, 2H), 7.69 (d, 2H), 7.74 (s, 1H), 7.81 (d, 1H) ppm.

**Example 60**

4-(2,4-Dichloro-phenyl)-1-isopropyl-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-1H-imidazole

- 5      4-(2,4-Dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-1H-imidazole  
(42 mg, 0.1 mmol) was treated with 2-bromopropane as described in general procedure  
E to give 4-(2,4-dichloro-phenyl)-1-isopropyl-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-  
1H-imidazole (16 mg, 33% yield).

LCMS:  $m/z$  463 (M+H)<sup>+</sup>.

10      **Example 61**

1-Cyclopropyl-4-(2,4-dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-1H-imidazole

- 15      4-(2,4-Dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-1H-imidazole  
(42 mg, 0.1 mmol) was treated with cyclopropyl bromide as described in general  
procedure E to give 1-cyclopropyl-4-(2,4-dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-  
yl)-(E)-vinyl]-1H-imidazole (14 mg, 30% yield).

LCMS:  $m/z$  461 (M+H)<sup>+</sup>.

**Example 62**

- 20      4-(2,4-Dichloro-phenyl)-2-[2-(4'-ethoxy-biphenyl-4-yl)-(E)-vinyl]-1-ethyl-1H-imidazole

4'-[2-[4-(2,4-Dichloro-phenyl)-1H-imidazol-2-yl]-(E)-vinyl]-biphenyl-4-ol (44 mg,  
0.1 mmol) was treated as described in general procedure E using ethyl bromide to give  
4-(2,4-dichloro-phenyl)-2-[2-(4'-ethoxy-biphenyl-4-yl)-(E)-vinyl]-1-ethyl-1H-imidazole (36  
mg, 79% yield).

LCMS:  $m/z$  463 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz):  $\delta$  1.46 (t, 3H), 1.57 (t, 3H), 4.09 (q, 2H), 4.30 (q, 2H), 6.94 (d, 1H), 6.97 (d, 2H), 7.45 (d, 1H), 7.50-7.56 (m, 6H), 7.75 (d, 2H), 8.59 (d, 1H), 8.93 (d, 1H) ppm.

## 5 Example 63

{4-(2,4-Dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-imidazol-1-yl}-acetic acid

10

4-(2,4-Dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-1H-imidazole (3.45 g, 10 mmol) was treated with methyl bromoacetate as described in general procedure E followed by ester hydrolysis as described in general procedure F to afford {4-(2,4-dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-imidazol-1-yl}-acetic acid (2.26 g, 15 56% yield).

LCMS:  $m/z$  403 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  3.82 (s, 3H), 4.97 (s, 2H), 6.88 (d, 1H), 6.95 (d, 2H), 7.33 (d, 1H), 7.51 (d, 2H), 7.52 (d, 1H), 7.54 (s, 1H), 7.66 (d, 1H), 7.93 (s, 1H) ppm.

20

## Example 64

2-{4-(2,4-Dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-imidazol-1-yl}-N-(1-naphthalen-1-yl-ethyl)-acetamide



{4-(2,4-Dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-imidazol-1-yl}-acetic acid (41 mg, 0.1 mmol) was coupled with DL-1-(1-naphthyl)ethylamine following the general procedure G to afford 2-{4-(2,4-dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-imidazol-1-yl}-N-(1-naphthalen-1-yl-ethyl)-acetamide (42 mg, 78% yield).

LCMS:  $m/z$  556 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  1.59 (d, 3H), 3.86 (s, 3H), 4.83 (s, 2H), 5.77 (m, 1H), 5.98 (m, 1H), 6.59 (d, 1H), 6.89 (d, 2H), 7.28-7.50 (m, 6H), 7.56 (s, 1H), 7.60 (d, 1H), 7.62 (d, 1H), 7.72 (d, 1H), 7.82 (d, 1H), 8.03 (d, 1H), 8.18 (d, 1H) ppm.

#### Example 65

2-{4-(2,4-Dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-imidazol-1-yl}-N-(1-naphthalen-1-yl-ethyl)-acetamide

{4-(2,4-Dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-imidazol-1-yl}-acetic acid (41 mg, 0.1 mmol) was coupled with (S)-1-(1-naphthyl)ethylamine following the general procedure G to afford 2-{4-(2,4-dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-imidazol-1-yl}-N-(1-naphthalen-1-yl-ethyl)-acetamide (41 mg, 73% yield).

LCMS:  $m/z$  556 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  1.61 (d, 3H), 3.83 (s, 3H), 4.78 (s, 2H), 5.77 (m, 1H), 5.98 (m, 1H), 6.59 (d, 1H), 6.89 (d, 2H), 7.28-7.50 (m, 6H), 7.56 (s, 1H), 7.60 (d, 1H), 7.62 (d, 1H), 7.72 (d, 1H), 7.82 (d, 1H), 8.03 (d, 1H), 8.19 (d, 1H) ppm.

#### Example 66

N-Butyl-2-{4-(2,4-dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-imidazol-1-yl}-acetamide

{4-(2,4-Dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-imidazol-1-yl}-acetic acid (41 mg, 0.1 mmol) was coupled with n-butylamine following the general procedure G to afford N-butyl-2-{4-(2,4-dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-imidazol-1-yl}-acetamide (39 mg, 85% yield).

5 LCMS:  $m/z$  458 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  1.24 (t, 3H), 1.43 (m, 2H), 1.84 (m, 2H), 3.08 (d, 2H), 3.83 (s, 3H), 4.89 (s, 2H), 6.87 (d, 1H), 6.94 (d, 2H), 7.33 (d, 1H), 7.51 (d, 2H), 7.52 (d, 1H), 7.54 (s, 1H), 7.66 (d, 1H), 7.93 (s, 1H) ppm.

### Example 67

10 2-{4-(2,4-Dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-imidazol-1-yl}-N-isobutyl-acetamide

{4-(2,4-Dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-imidazol-1-yl}-acetic acid (41 mg, 0.1 mmol) was coupled with isobutylamine following the general procedure G to afford 2-{4-(2,4-dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-imidazol-1-yl}-N-isobutyl-acetamide (36 mg, 78% yield).

15 LCMS:  $m/z$  458 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  0.90 (d, 6H), 1.80 (m, 1H), 3.07 (d, 2H), 3.82 (s, 3H), 4.87 (s, 2H), 6.87 (d, 1H), 6.94 (d, 2H), 7.33 (d, 1H), 7.51 (d, 2H), 7.52 (d, 1H), 7.54 (s, 1H), 7.66 (d, 1H), 7.93 (s, 1H) ppm.

### 20 Example 68

2-{4-(2,4-Dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-imidazol-1-yl}-N,N-diisopropyl-acetamide

25 {4-(2,4-Dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-imidazol-1-yl}-acetic acid (20 mg, 0.05 mmol) was coupled with diisopropylamine following the general procedure G to afford 2-{4-(2,4-dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-imidazol-1-yl}-N,N-diisopropyl-acetamide (14 mg, 58% yield).

LCMS:  $m/z$  486 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  1.32 (d, 6H), 1.38 (d, 6H), 3.61 (m, 1H), 3.82 (s, 3H), 4.13 (m, 1H), 5.12 (s, 2H), 6.81 (d, 1H), 6.94 (d, 2H), 7.45 (d, 1H), 7.50-7.52 (m, 4H), 7.68 (dd, 1H), 7.96 (d, 1H) ppm.

## 5 Example 69

2-{4-(2,4-Dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-imidazol-1-yl}-N-(3-dimethylamino-propyl)-acetamide

{4-(2,4-Dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-imidazol-1-yl}-acetic acid (20 mg, 0.05 mmol) was coupled with 3-(dimethylamino)-propylamine following the general procedure G to afford 2-{4-(2,4-dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-imidazol-1-yl}-N-(3-dimethylamino-propyl)-acetamide (19 mg, 78% yield).

LCMS:  $m/z$  487 ( $M+H$ )<sup>+</sup>.

## Example 70

15 2-{4-(2,4-Dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-imidazol-1-yl}-N-[2-(3-methoxy-phenyl)-ethyl]-acetamide

{4-(2,4-Dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-imidazol-1-yl}-acetic acid (41 mg, 0.1 mmol) was coupled with 3-methoxyphenethyl-amine following the general procedure G to afford 2-{4-(2,4-dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-imidazol-1-yl}-N-[2-(3-methoxy-phenyl)-ethyl]-acetamide (43 mg, 80% yield).

20 LCMS:  $m/z$  536 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  2.82 (t, 2H), 3.53 (m, 2H), 3.73 (s, 3H), 3.86 (s, 3H), 5.11 (s, 2H), 6.71-6.80 (m, 3H), 7.01 (d, 1H), 7.04 (d, 2H), 7.15 (m, 1H), 7.57 (dd, 1H), 7.66 (d, 2H), 7.71 (d, 1H), 7.73 (d, 1H), 7.76 (d, 1H), 7.83 (s, 1H) ppm.

25

## Example 71

N-(4-tert-Butyl-benzyl)-2-{4-(2,4-dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-imidazol-1-yl}-acetamide

5 {4-(2,4-Dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-imidazol-1-yl}-acetic acid (41 mg, 0.1 mmol) was coupled with 4-tert-butyl-benzylamine following the general procedure G to afford N-(4-tert-butyl-benzyl)-2-{4-(2,4-dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-imidazol-1-yl}-acetamide (46 mg, 83% yield).

10 LCMS:  $m/z$  548 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz):  $\delta$  1.22 (s, 9H), 3.85 (s, 3H), 4.43 (d, 2H), 4.82 (s, 2H), 5.82 (m, 1H), 6.69 (d, 1H), 6.93 (d, 2H), 7.08 (d, 2H), 7.17 (d, 2H), 7.33 (dd, 1H), 7.43 (d, 1H), 7.49 (d, 2H), 7.65 (s, 1H), 7.67 (d, 1H), 8.23 (d, 1H) ppm.

**Example 72**

2-{4-(2,4-Dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-imidazol-1-yl}-N-[2-(4-methoxy-phenyl)-ethyl]-acetamide

15 {4-(2,4-Dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-imidazol-1-yl}-acetic acid (41 mg, 0.1 mmol) was coupled with 4-methoxyphenethyl-amine following the general procedure G to afford 2-{4-(2,4-dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-imidazol-1-yl}-N-[2-(4-methoxy-phenyl)-ethyl]-acetamide (47 mg, 87% yield).

20 LCMS:  $m/z$  536 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  2.84 (t, 2H), 3.53 (m, 2H), 3.73 (s, 3H), 3.86 (s, 3H), 5.11 (s, 2H), 6.71-6.80 (m, 3H), 7.04 (d, 2H), 7.10 (d, 2H), 7.57 (dd, 1H), 7.66 (d, 2H), 7.71 (d, 1H), 7.73 (d, 1H), 7.76 (d, 1H), 7.81 (s, 1H) ppm.

**Example 73**

25 2-{4-(2,4-Dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-imidazol-1-yl}-N-[2-(3,4-dimethoxy-phenyl)-ethyl]-acetamide

{4-(2,4-Dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-imidazol-1-yl}-acetic acid (41 mg, 0.1 mmol) was coupled with 3,4-dimethoxyphenethylamine following the general procedure G to afford 2-{4-(2,4-dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-imidazol-1-yl}-N-[2-(3,4-dimethoxy-phenyl)-ethyl]-acetamide (48 mg, 84% yield).

5 LCMS:  $m/z$  566 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  2.84 (t, 2H), 3.53 (m, 2H), 3.73 (s, 3H), 3.82 (s, 3H), 3.86 (s, 3H), 5.11 (s, 2H), 6.71-6.80 (m, 3H), 7.04 (d, 2H), 7.10 (d, 2H), 7.57 (dd, 1H), 7.66 (d, 2H), 7.71 (d, 1H), 7.73 (d, 1H), 7.76 (d, 1H), 7.81 (s, 1H) ppm.

#### 10 Example 74

2-{4-(2,4-Dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-imidazol-1-yl}-N-[2-(4-fluoro-phenyl)-ethyl]-acetamide

15 {4-(2,4-Dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-imidazol-1-yl}-acetic acid (41 mg, 0.1 mmol) was coupled with 4-fluorophenethylamine following the general procedure G to afford 2-{4-(2,4-dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-imidazol-1-yl}-N-[2-(4-fluoro-phenyl)-ethyl]-acetamide (48 mg, 91% yield).

LCMS:  $m/z$  524 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  2.83 (t, 2H), 3.52 (m, 2H), 3.83 (s, 3H), 5.11 (s, 2H), 6.71-6.80 (m, 3H), 7.04 (d, 2H), 7.10 (d, 2H), 7.57 (dd, 1H), 7.66 (d, 2H), 7.71 (d, 1H), 7.73 (d, 1H), 7.76 (d, 1H), 7.81 (s, 1H) ppm.

20

#### Example 75

2-{4-(2,4-Dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-imidazol-1-yl}-N-wasquinolin-5-yl-acetamide

25 {4-(2,4-Dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-imidazol-1-yl}-acetic acid (41 mg, 0.1 mmol) was coupled with 5-aminoisoquinoline following the general procedure G to afford 2-{4-(2,4-dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-imidazol-1-yl}-N-isoquinolin-5-yl-acetamide (39 mg, 74% yield).

LCMS:  $m/z$  529 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  3.83 (s, 3H), 5.12 (s, 2H), 6.73-6.87 (m, 5H), 7.04 (d, 2H), 7.10 (d, 2H), 7.57 (dd, 1H), 7.66 (d, 2H), 7.71 (d, 1H), 7.73 (d, 1H), 7.76 (d, 1H), 7.81 (s, 1H) ppm.

## 5 Example 76

### 2-{4-(2,4-Dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-imidazol-1-yl}-N-pyridin-4-yl-acetamide

10 {4-(2,4-Dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-imidazol-1-yl}-acetic acid (41 mg, 0.1 mmol) was coupled with 4-aminopyridine following the general procedure G to afford 2-{4-(2,4-dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-imidazol-1-yl}-N-pyridin-4-yl-acetamide (33 mg, 68% yield).

LCMS:  $m/z$  479 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  3.80 (s, 3H), 5.11 (s, 2H), 6.73-6.81 (m, 3H), 7.04 (d, 2H), 7.10 (d, 2H), 7.57 (dd, 1H), 7.66 (d, 2H), 7.71 (d, 1H), 7.73 (d, 1H), 7.76 (d, 1H), 7.83 (s, 1H) ppm.

15

## Example 77

### [4-(2,4-Dichloro-phenyl)-2-fluoren-9-ylidenemethyl-imidazol-1-yl]-acetic acid

20 4-(2,4-Dichloro-phenyl)-2-fluoren-9-ylidenemethyl-1H-imidazole (389 mg, 1 mmol) was treated with methyl bromoacetate as described in general procedure E followed by ester hydrolysis as described in general procedure F to afford [4-(2,4-dichloro-phenyl)-2-fluoren-9-ylidenemethyl-imidazol-1-yl]-acetic acid (260 mg, 58% yield).

25 LCMS:  $m/z$  447 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  5.02 (s, 2H), 7.25 (m, 1H), 7.37-7.51 (m, 5H), 7.57 (dd, 1H), 7.73 (d, 1H), 7.77-7.82 (m, 3H), 7.93 (d, 1H), 8.08 (s, 1H) ppm.

**Exempl 78**2-[4-(2,4-Dichloro-phenyl)-2-fluoren-9-ylidenemethyl-imidazol-1-yl]-N-[2-(3-methoxy-phenyl)-ethyl]-acetamide

5 [4-(2,4-Dichloro-phenyl)-2-fluoren-9-ylidenemethyl-imidazol-1-yl]-acetic acid (45 mg, 0.1 mmol) was coupled with 3-methoxyphenethylamine following the general procedure G to afford 2-[4-(2,4-dichloro-phenyl)-2-fluoren-9-ylidenemethyl-imidazol-1-yl]-N-[2-(3-methoxy-phenyl)-ethyl]-acetamide (47 mg, 81% yield).

LCMS:  $m/z$  580 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  2.82 (t, 2H), 3.53 (m, 2H), 3.73 (s, 3H), 5.08 (s, 2H), 6.71-6.80 (m, 3H), 7.01 (d, 1H), 7.25 (m, 1H), 7.37-7.51 (m, 5H), 7.57 (dd, 1H), 7.73 (d, 1H), 7.77-7.82 (m, 3H), 7.93 (d, 1H), 8.08 (s, 1H) ppm.

**Example 79**2-[4-(2,4-Dichloro-phenyl)-2-fluoren-9-ylidenemethyl-imidazol-1-yl]-N-[2-(4-methoxy-phenyl)-ethyl]-acetamide

15 [4-(2,4-Dichloro-phenyl)-2-fluoren-9-ylidenemethyl-imidazol-1-yl]-acetic acid (45 mg, 0.1 mmol) was coupled with 4-methoxyphenethyl-amine following the general procedure G to afford 2-[4-(2,4-dichloro-phenyl)-2-fluoren-9-ylidenemethyl-imidazol-1-yl]-N-[2-(4-methoxy-phenyl)-ethyl]-acetamide (51 mg, 88% yield).

LCMS:  $m/z$  580 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  2.83 (t, 2H), 3.53 (m, 2H), 3.73 (s, 3H), 5.08 (s, 2H), 6.77 (d, 2H), 7.03 (d, 2H), 7.25 (m, 1H), 7.37-7.51 (m, 5H), 7.57 (dd, 1H), 7.73 (d, 1H), 7.77-7.82 (m, 3H), 7.93 (d, 1H), 8.09 (s, 1H) ppm.

**Example 80**2-[4-(2,4-Dichloro-phenyl)-2-fluoren-9-ylidenemethyl-imidazol-1-yl]-N-(1-naphthalen-1-yl-ethyl)-acetamide

[4-(2,4-Dichloro-phenyl)-2-fluoren-9-ylidenemethyl-imidazol-1-yl]-acetic acid (45 mg, 0.1 mmol) was coupled with DL-1-(1-naphthyl)ethylamine following the general procedure G to afford 2-[4-(2,4-dichloro-phenyl)-2-fluoren-9-ylidenemethyl-imidazol-1-yl]-N-(1-naphthalen-1-yl-ethyl)-acetamide (53 mg, 88% yield).

5 LCMS:  $m/z$  600 (M+H)<sup>+</sup>.

### Example 81

#### 4-[4-(2,4-Dichloro-phenyl)-2-fluoren-9-ylidenemethyl-imidazol-1-yl]-butyric acid

10 4-(2,4-Dichloro-phenyl)-2-fluoren-9-ylidenemethyl-1H-imidazole (39 mg, 0.1 mmol) was treated with methyl 1-bromobutyrate as described in general procedure E followed by ester hydrolysis as described in general procedure F to afford 4-[4-(2,4-dichloro-phenyl)-2-fluoren-9-ylidenemethyl-imidazol-1-yl]-butyric acid (23 mg, 48% yield).

15 LCMS:  $m/z$  475 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  2.14 (m, 2H), 2.40 (t, 2H), 4.32 (t, 2H), 7.26 (m, 1H), 7.33 (m, 1H), 7.39 (t, 2H), 7.44 (dd, 1H), 7.53 (s, 1H), 7.56 (dd, 1H), 7.75 (t, 2H), 7.97 (s, 1H), 8.02 (d, 1H), 8.12 (d, 1H), 8.83 (d, 1H) ppm.

### Example 82

#### 2-{4-(2,4-Dichloro-phenyl)-2-[2-(4-hydroxy-phenyl)-(E)-vinyl]-imidazol-1-yl}-N-(1-naphthalen-1-yl-ethyl)-acetamide

20 2-{4-(2,4-Dichloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-imidazol-1-yl}-N-(1-naphthalen-1-yl-ethyl)-acetamide (556 mg, 1 mmol) was treated according to the general procedure C to afford 2-{4-(2,4-dichloro-phenyl)-2-[2-(4-hydroxy-phenyl)-(E)-vinyl]-imidazol-1-yl}-N-(1-naphthalen-1-yl-ethyl)-acetamide (412 mg, 76% yield).

25 LCMS:  $m/z$  542 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  1.59 (d, 3H), 4.78 (s, 2H), 5.77 (m, 1H), 5.98 (m, 1H), 6.59 (d, 1H), 6.89 (d, 2H), 7.28-7.50 (m, 6H), 7.56 (s, 1H), 7.60 (d, 1H), 7.62 (d, 1H), 7.72 (d, 1H), 7.82 (d, 1H), 8.03 (d, 1H), 8.18 (d, 1H) ppm.



**Example 83**

4-(2-{4-(2,4-Dichloro-phenyl)-1-[(1-naphthalen-1-yl-ethylcarbamoyl)-methyl]-1H-imidazol-2-yl}-(E)-vinyl)-phenoxy]-acetic acid

- 5            2-{4-(2,4-Dichloro-phenyl)-2-[2-(4-hydroxy-phenyl)-(E)-vinyl]-imidazol-1-yl}-N-(1-naphthalen-1-yl-ethyl)-acetamide (54 mg, 0.1 mmol) was treated with methyl bromoacetate as described in the general procedure E followed by ester hydrolysis as described in the general procedure F to give 4-(2-{4-(2,4-Dichloro-phenyl)-1-[(1-naphthalen-1-yl-ethylcarbamoyl)-methyl]-1H-imidazol-2-yl}-(E)-vinyl)-phenoxy]-acetic acid (21 mg, 35% yield).
- 10

LCMS:  $m/z$  600 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  1.59 (d, 3H), 4.21 (s, 2H), 4.78 (s, 2H), 5.77 (m, 1H), 5.98 (m, 1H), 6.59 (d, 1H), 6.89 (d, 2H), 7.28-7.50 (m, 6H), 7.56 (s, 1H), 7.60 (d, 1H), 7.62 (d, 1H), 7.72 (d, 1H), 7.82 (d, 1H), 8.03 (d, 1H), 8.18 (d, 1H) ppm.

15

**Example 84**

4-[4-(2-{4-(2,4-Dichloro-phenyl)-1-[(1-naphthalen-1-yl-ethylcarbamoyl)-methyl]-1H-imidazol-2-yl}-(E)-vinyl)-phenoxy]-butyric acid

- 20            2-{4-(2,4-Dichloro-phenyl)-2-[2-(4-hydroxy-phenyl)-(E)-vinyl]-imidazol-1-yl}-N-(1-naphthalen-1-yl-ethyl)-acetamide (54 mg, 0.1 mmol) was treated with methyl 4-bromobutyrate as described in the general procedure E followed by ester hydrolysis as described in the general procedure F to give 4-[4-(2-{4-(2,4-dichloro-phenyl)-1-[(1-naphthalen-1-yl-ethylcarbamoyl)-methyl]-1H-imidazol-2-yl}-(E)-vinyl)-phenoxy]-butyric acid (25 mg, 39% yield).

- 25            LCMS:  $m/z$  628 (M+H)<sup>+</sup>.

**Example 85**

4-[4-(2-{4-(2,4-Dichloro-phenyl)-1-[(1-naphthalen-1-yl-ethylcarbamoyl)-methyl]-1H-imidazol-2-yl}-(E)-vinyl)-phenoxy-methyl]-benzoic acid

2-{4-(2,4-Dichloro-phenyl)-2-[2-(4-hydroxy-phenyl)-(E)-vinyl]-imidazol-1-yl}-N-(1-naphthalen-1-yl-ethyl)-acetamide (54 mg, 0.1 mmol) was treated with methyl 4-(bromomethyl)benzoate as described in the general procedure E followed by ester hydrolysis as described in the general procedure F to give 4-[4-(2-{4-(2,4-dichloro-phenyl)-1-[(1-naphthalen-1-yl-ethylcarbamoyl)-methyl]-1H-imidazol-2-yl}-(E)-vinyl)-phenoxy-methyl]-benzoic acid (29 mg, 42% yield).

LCMS:  $m/z$  676 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  1.59 (d, 3H), 4.78 (s, 2H), 5.21 (s, 2H), 5.77 (m, 1H), 5.98 (m, 1H), 6.59 (d, 1H), 6.89 (d, 2H), 7.28-7.50 (m, 10H), 7.56 (s, 1H), 7.60 (d, 1H), 7.62 (d, 1H), 7.72 (d, 1H), 7.82 (d, 1H), 8.03 (d, 1H), 8.18 (d, 1H) ppm.

**Example 86**

3-[4-(2-{4-(2,4-Dichloro-phenyl)-1-[(1-naphthalen-1-yl-ethylcarbamoyl)-methyl]-1H-imidazol-2-yl}-(E)-vinyl)-phenoxy-methyl]-benzoic acid

2-{4-(2,4-Dichloro-phenyl)-2-[2-(4-hydroxy-phenyl)-(E)-vinyl]-imidazol-1-yl}-N-(1-naphthalen-1-yl-ethyl)-acetamide (54 mg, 0.1 mmol) was treated with methyl 3-(bromomethyl)benzoate as described in the general procedure E followed by ester hydrolysis as described in the general procedure F to give 3-[4-(2-{4-(2,4-dichloro-phenyl)-1-[(1-naphthalen-1-yl-ethylcarbamoyl)-methyl]-1H-imidazol-2-yl}-(E)-vinyl)-phenoxy-methyl]-benzoic acid (26 mg, 38% yield).

LCMS:  $m/z$  676 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  1.61 (d, 3H), 4.81 (s, 2H), 5.21 (s, 2H), 5.77 (m, 1H), 5.98 (m, 1H), 6.59 (d, 1H), 6.89 (d, 2H), 7.29-7.52 (m, 10H), 7.56 (s, 1H), 7.60 (d, 1H), 7.62 (d, 1H), 7.72 (d, 1H), 7.82 (d, 1H), 8.03 (d, 1H), 8.19 (d, 1H) ppm.

**Example 87**

2-{4-(2,4-Dichloro-phenyl)-2-[2-(4-ethoxy-phenyl)-(E)-vinyl]-imidazol-1-yl}-N-(1-naphthalen-1-yl-ethyl)-acetamide

2-{4-(2,4-Dichloro-phenyl)-2-[2-(4-hydroxy-phenyl)-(E)-vinyl]-imidazol-1-yl}-N-(1-naphthalen-1-yl-ethyl)-acetamide (54 mg, 0.1 mmol) was treated with ethyl bromide as described in the general procedure E to give 2-{4-(2,4-dichloro-phenyl)-2-[2-(4-ethoxy-phenyl)-(E)-vinyl]-imidazol-1-yl}-N-(1-naphthalen-1-yl-ethyl)-acetamide (47 mg, 82% yield).

LCMS:  $m/z$  570 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  1.43 (t, 3H), 1.59 (d, 3H), 4.22 (q, 2H), 4.78 (s, 2H), 5.77 (m, 1H), 5.98 (m, 1H), 6.59 (d, 1H), 6.89 (d, 2H), 7.28-7.50 (m, 6H), 7.56 (s, 1H), 7.60 (d, 1H), 7.62 (d, 1H), 7.72 (d, 1H), 7.82 (d, 1H), 8.03 (d, 1H), 8.18 (d, 1H) ppm.

**Example 88**

4-(4'-{2-[1-Benzyl-4-(2,4-dichloro-phenyl)-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-butyric acid

1-Benzyl-4-(2,4-dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-1H-imidazole (51 mg, 0.1 mmol) was treated as described in general procedure C and the resulting phenol was treated with methyl 4-bromobutyrate as described in the general procedure E followed by ester hydrolysis as described in the general procedure F to give 4-(4'-{2-[1-benzyl-4-(2,4-dichloro-phenyl)-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-butyric acid (20 mg, 34% yield).

LCMS:  $m/z$  583 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  1.95 (m, 2H), 2.38 (t, 2H), 4.12 (t, 2H), 5.33 (s, 2H), 7.10 (d, 1H), 7.12 (d, 1H), 7.42 (m, 2H), 7.48 (d, 2H), 7.51 (m, 5H), 7.61 (d, 2H), 7.65 (d, 2H), 7.69 (d, 2H), 7.74 (s, 1H), 7.81 (d, 1H) ppm.

**Example 89**

4-(4'-(2-[1-Butyl-4-(2,4-dichloro-phenyl)-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-butyric acid

1-Butyl-4-(2,4-dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-1H-imidazole (48 mg, 0.1 mmol) was treated as described in general procedure C and the  
5 resulting phenol was treated with methyl 4-bromobutyrate as described in the general procedure E followed by ester hydrolysis as described in the general procedure F to give 4-(4'-(2-[1-butyl-4-(2,4-dichloro-phenyl)-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-butyric acid (22 mg, 39% yield).

LCMS:  $m/z$  549 (M+H)<sup>+</sup>.

10

**Example 90**

{4-(2,4-Dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-yl}-acetic acid

4-(2,4-Dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-1H-imidazole  
15 (421 mg, 1 mmol) was treated with methyl bromoacetate as described in general procedure E followed by ester hydrolysis as described in general procedure F to afford {4-(2,4-dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-yl}-acetic acid (268 mg, 56% yield).

LCMS:  $m/z$  479 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  3.82 (s, 3H), 4.95 (s, 2H),  
20 7.03 (d, 2H), 7.15 (d, 1H), 7.58-7.61 (m, 3H), 7.68-7.70 (m, 6H), 7.73 (d, 1H), 7.90 (s, 1H) ppm.

**Example 91**

2-{4-(2,4-Dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-yl}-N-(1-naphthalen-1-yl-ethyl)-acetamide

{4-(2,4-Dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-yl}-acetic acid (24 mg, 0.05 mmol) was coupled with DL-1-(1-naphthyl)ethylamine following

the general procedure G to afford 2-{4-(2,4-dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-yl}-N-(1-naphthalen-1-yl-ethyl)-acetamide (21 mg, 67% yield).

LCMS:  $m/z$  632 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  1.61 (d, 3H), 3.83 (s, 3H), 4.78 (s, 2H), 5.77 (m, 1H), 5.98 (m, 1H), 6.59 (d, 1H), 6.89 (d, 2H), 7.29-7.52 (m, 10H), 7.56 (s, 1H), 7.60 (d, 1H), 7.62 (d, 1H), 7.72 (d, 1H), 7.82 (d, 1H), 8.03 (d, 1H), 8.19 (d, 1H) ppm.

### Example 92

10 2-{4-(2,4-Dichloro-phenyl)-2-[2-(4'-hydroxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-yl}-N-(1-naphthalen-1-yl-ethyl)-acetamide

2-{4-(2,4-Dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-yl}-N-(1-naphthalen-1-yl-ethyl)-acetamide (64 mg, 0.1 mmol) was treated as described in the general procedure C to afford 2-{4-(2,4-dichloro-phenyl)-2-[2-(4'-hydroxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-yl}-N-(1-naphthalen-1-yl-ethyl)-acetamide (52 mg, 83% yield).

15 LCMS:  $m/z$  618 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  1.63 (d, 3H), 4.80 (s, 2H), 5.77 (m, 1H), 5.98 (m, 1H), 6.59 (d, 1H), 6.89 (d, 2H), 7.29-7.52 (m, 10H), 7.56 (s, 1H), 7.60 (d, 1H), 7.62 (d, 1H), 7.72 (d, 1H), 7.82 (d, 1H), 8.03 (d, 1H), 8.17 (d, 1H) ppm.

### Example 93

20 4-[4'-(2-{4-(2,4-Dichloro-phenyl)-1-[(1-naphthalen-1-yl-ethyl)carbamoyl]-methyl]-1H-imidazol-2-yl}-(E)-vinyl)-biphenyl-4-yloxy]-butyric acid

25 2-{4-(2,4-Dichloro-phenyl)-2-[2-(4'-hydroxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-yl}-N-(1-naphthalen-1-yl-ethyl)-acetamide (62 mg, 0.1 mmol) was treated with methyl 4-bromobutyrate as described in the general procedure E followed by ester hydrolysis as described in the general procedure F to afford 4-[4'-(2-{4-(2,4-dichloro-phenyl)-1-[(1-naphthalen-1-yl-ethyl)carbamoyl]-methyl]-1H-imidazol-2-yl}-(E)-vinyl)-biphenyl-4-yloxy]-butyric acid (38 mg, 53% yield).

LCMS:  $m/z$  704 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  1.63 (d, 3H), 1.97 (m, 2H), 2.41 (t, 2H), 4.12 (t, 2H), 4.80 (s, 2H), 5.77 (m, 1H), 5.98 (m, 1H), 6.59 (d, 1H), 6.89 (d, 2H), 7.29-7.52 (m, 10H), 7.56 (s, 1H), 7.60 (d, 1H), 7.62 (d, 1H), 7.72 (d, 1H), 7.82 (d, 1H), 8.03 (d, 1H), 8.17 (d, 1H) ppm.

5

**Example 94**

2-{4-(2,4-Dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-yl}-N-(2-morpholin-4-yl-ethyl)-acetamide

10 {4-(2,4-Dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-yl}-acetic acid (24 mg, 0.05 mmol) was coupled with 4-(2-aminoethyl)-morpholine following the general procedure G to afford 2-{4-(2,4-dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-yl}-N-(2-morpholin-4-yl-ethyl)-acetamide (23 mg, 76% yield).

LCMS:  $m/z$  591 ( $M+H$ )<sup>+</sup>.

15 **Example 95**

2-{4-(2,4-Dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-yl}-N-(3,3-dimethyl-butyl)-acetamide

20 {4-(2,4-Dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-yl}-acetic acid (24 mg, 0.05 mmol) was coupled with 3,3-dimethylbutylamine following the general procedure G to afford 2-{4-(2,4-dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-yl}-N-(3,3-dimethyl-butyl)-acetamide (23 mg, 82% yield).

LCMS:  $m/z$  562 ( $M+H$ )<sup>+</sup>.

**Example 96**

2-{4-(2,4-Dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-yl}-N-[2-(4-methoxy-phenyl)-ethyl]-acetamide

{4-(2,4-Dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-yl}-acetic acid (24 mg, 0.05 mmol) was coupled with 4-methoxyphenethyl-amine following the general procedure G to afford 2-{4-(2,4-dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-yl}-N-[2-(4-methoxy-phenyl)-ethyl]-acetamide (25 mg, 83% yield).

LCMS:  $m/z$  612 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  2.84 (t, 2H), 3.53 (m, 2H), 3.73 (s, 3H), 3.86 (s, 3H), 5.02 (s, 2H), 6.71-6.80 (m, 3H), 7.04 (d, 2H), 7.10 (d, 2H), 7.23 (d, 2H), 7.36 (d, 2H), 7.57 (dd, 1H), 7.66 (d, 2H), 7.71 (d, 1H), 7.73 (d, 1H), 7.76 (d, 1H), 7.81 (s, 1H) ppm.

**Example 97**

4-(4'-(2-[4-(2,4-Dichloro-phenyl)-1-methylcarbamoylmethyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-butyric acid

{4-(2,4-Dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-yl}-acetic acid (48 mg, 0.1 mmol) was coupled with methylamine as described in the general procedure G and then demethylated as described in the general procedure C. The resulting phenol was treated with methyl 4-bromobutyrate as described in the general procedure E followed by ester hydrolysis as described in the general procedure F to afford 4-(4'-(2-[4-(2,4-dichloro-phenyl)-1-methylcarbamoylmethyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-butyric acid (13 mg, 23% yield).

LCMS:  $m/z$  564 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  1.95 (m, 2H), 2.38 (t, 2H), 2.88 (d, 3H), 4.12 (t, 2H), 4.88 (s, 2H), 7.10 (d, 1H), 7.12 (d, 1H), 7.42 (m, 2H), 7.48 (d, 2H), 7.61 (d, 2H), 7.65 (d, 2H), 7.69 (d, 2H), 7.74 (s, 1H), 7.81 (d, 1H) ppm.

**Example 98**

4-(4'-(2-[4-(2,4-Dichloro-phenyl)-1-ethylcarbamoylmethyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-butyric acid

{4-(2,4-Dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-yl}-acetic acid (48 mg, 0.1 mmol) was coupled with ethylamine as described in the general procedure G and then demethylated as described in the general procedure C. The resulting phenol was treated with methyl 4-bromobutyrate as described in the general procedure E followed by ester hydrolysis as described in the general procedure F to afford 4-(4'-(2-[4-(2,4-dichloro-phenyl)-1-ethylcarbamoylmethyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-butyric acid (15 mg, 26% yield).

LCMS:  $m/z$  578 (M+H)<sup>+</sup>.

**Example 99**

4-(4'-(2-[1-Butylcarbamoylmethyl-4-(2,4-dichloro-phenyl)-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-butyric acid

{4-(2,4-Dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-yl}-acetic acid (48 mg, 0.1 mmol) was coupled with n-butylamine as described in the general procedure G and then demethylated as described in the general procedure C. The resulting phenol was treated with methyl 4-bromobutyrate as described in the general procedure E followed by ester hydrolysis as described in the general procedure F to afford 4-(4'-(2-[1-butylcarbamoylmethyl-4-(2,4-dichloro-phenyl)-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-butyric acid (19 mg, 31% yield).

LCMS:  $m/z$  606 (M+H)<sup>+</sup>.

**Example 100**

4-[2-[2-[4'-(3-Carboxy-propoxy)-biphenyl-4-yl]-(E)-vinyl]-4-(2,4-dichloro-phenyl)-imidazol-1-yl]-butyric acid



4-(2,4-Dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-1H-imidazole (42 mg, 0.1 mmol) was demethylated as described in the general procedure C and the resulting intermediate was treated with 2 equivalents of methyl 4-bromobutyrate as described in the general procedure E followed by ester hydrolysis as described in the  
5 general procedure F to afford 4-[2-[2-(4'-(3-carboxy-propoxy)-biphenyl-4-yl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-imidazol-1-yl]-butyric acid (16 mg, 27% yield).

LCMS:  $m/z$  579 (M+H)<sup>+</sup>.

### Example 101

10 4-{4-(2,4-Dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-yl}-butyric acid

4-(2,4-Dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-1H-imidazole (42 mg, 0.1 mmol) was treated with methyl 1-bromobutyrate as described in general procedure E followed by ester hydrolysis as described in general procedure F to provide  
15 4-{4-(2,4-dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-yl}-butyric acid (27 mg, 53% yield).

LCMS:  $m/z$  507 (M+H)<sup>+</sup>.

### Example 102

20 4-{4-(2,4-Dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-yl}-N-(1-naphthalen-1-yl-ethyl)-butyramide

4-{4-(2,4-Dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-yl}-butyric acid (26 mg, 0.05 mmol) was coupled with DL-1-(1-naphthyl)ethylamine following the general procedure G to afford 4-{4-(2,4-dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-yl}-N-(1-naphthalen-1-yl-ethyl)-butyramide (15 mg, 45% yield).  
25

LCMS:  $m/z$  660 (M+H)<sup>+</sup>.

**Example 103**

4-{4-(2,4-Dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-yl}-N-(3,3-dimethyl-butyl)-butyramide

- 5            4-{4-(2,4-Dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-yl}-butyric acid (26 mg, 0.05 mmol) was coupled with 3,3-dimethylbutylamine following the general procedure G to afford 4-{4-(2,4-dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-yl}-N-(3,3-dimethyl-butyl)-butyramide (22 mg, 75% yield).

LCMS:  $m/z$  590 (M+H)<sup>+</sup>.

10

**Example 104**

2-[2-(4-Bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazole

- 15            2-[2-(4-Bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (394 mg, 1 mmol) was treated as described in general procedure E using ethyl bromide to give 2-[2-(4-bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazole (367 mg, 87% yield).

LCMS:  $m/z$  422 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz):  $\delta$  1.51 (t, 3H), 4.14 (q, 2H), 7.14 (d, 1H), 7.51 (d, 2H), 7.70 (d, 2H), 7.72 (m, 2H), 7.75 (d, 1H), 8.02 (m, 1H), 8.05 (s, 1H) ppm.

20

**Example 105**

4-(2,4-Dichloro-phenyl)-1-ethyl-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-1H-imidazole

2-[2-(4-Bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazole (300 mg, 0.71 mmol) was treated as described in general procedure B using 4-

methoxyphenylboronic acid to give 4-(2,4-dichloro-phenyl)-1-ethyl-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-1H-imidazole (210 mg, 66% yield).

LCMS:  $m/z$  449 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz):  $\delta$  1.52 (t, 3H), 3.86 (s, 3H), 4.14 (q, 2H), 6.94 (d, 1H), 6.99 (d, 2H), 7.32 (m, 1H), 7.42 (d, 1H), 7.55-7.63 (m, 6H), 7.67 (s, 1H), 7.73 (d, 1H), 8.25 (d, 1H) ppm.

### Example 106

#### 4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-ol

4-(2,4-Dichloro-phenyl)-1-ethyl-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-1H-imidazole (200 mg, 0.44 mmol) was treated as described in general procedure C to give 4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-ol (153 mg, 79% yield).

LCMS:  $m/z$  435 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (DMSO-*d*<sub>6</sub>, 400 MHz):  $\delta$  1.42 (t, 3H), 4.10 (q, 2H), 6.86 (d, 2H), 7.46 (d, 1H), 7.58 (d, 2H), 7.66 (dd, 1H), 7.70 (d, 2H), 7.82 (d, 2H), 7.85-7.92 (m, 3H), 8.19 (s, 1H) ppm.

### Example 107

#### (4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-acetic acid

4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-ol (44 mg, 0.1 mmol) was treated with methyl bromoacetate according to the general procedure E followed by ester hydrolysis according to the general procedure F to give (4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-acetic acid (23 mg, 47% yield).

LCMS:  $m/z$  493 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz):  $\delta$  1.50 (t, 3H), 4.35 (q, 2H), 4.79 (s, 2H), 6.94 (d, 1H), 6.99 (d, 2H), 7.32 (m, 1H), 7.42 (d, 1H), 7.55-7.63 (m, 6H), 7.67 (s, 1H), 7.73 (d, 1H), 8.25 (d, 1H) ppm.

## 5 Example 108

2-(4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-butyric acid

4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-ol (44 mg, 0.1 mmol) was treated with (DL)-methyl 2-bromobutyrate as described in the general procedure E followed by ester hydrolysis as described in the general procedure F to give 2-(4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-butyric acid (17 mg, 32% yield).

LCMS:  $m/z$  521 ( $M+H$ )<sup>+</sup>.

## 15 Example 109

4-(4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-butyric acid methyl ester

4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-ol (87 mg, 0.2 mmol) was treated with methyl 4-bromobutyrate following the general procedure E to give 4-(4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-butyric acid methyl ester (86 mg, 81% yield).

LCMS:  $m/z$  535 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz):  $\delta$  1.21 (t, 3H), 2.15 (m, 2H), 2.56 (t, 2H), 3.71 (s, 3H), 3.94 (q, 2H), 4.06 (t, 2H), 6.95 (d, 1H), 6.97 (d, 2H), 7.30 (m, 1H), 7.42 (d, 1H), 7.55-7.61 (m, 6H), 7.71 (s, 1H), 7.73 (d, 1H), 8.25 (d, 1H) ppm.

25

## Example 110

4-(4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-butyric acid

4-(4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-butyric acid methyl ester (54 mg, 0.1 mmol) was treated as described in general procedure F to give 4-(4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-butyric acid (45 mg, 86% yield).

LCMS:  $m/z$  521 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (DMSO-d<sub>6</sub>, 400 MHz):  $\delta$  1.37 (t, 3H), 1.96 (m, 2H), 2.41 (t, 2H), 4.04 (t, 2H), 4.27 (q, 2H), 7.04 (d, 2H), 7.32 (d, 1H), 7.50 (dd, 1H), 7.57 (d, 1H), 7.64-7.67 (m, 5H), 7.79 (d, 2H), 7.96 (s, 1H), 8.25 (d, 1H) ppm.

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### Example 111

(4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-phenyl-acetic acid

4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-ol (44 mg, 0.1 mmol) was treated with methyl  $\alpha$ -bromophenylacetate according to the general procedure E followed by ester hydrolysis according to the general procedure F to give (4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-phenyl-acetic acid (21 mg, 37% yield).

LCMS:  $m/z$  569 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  1.50 (t, 3H), 4.35 (q, 2H), 5.79 (s, 1H), 6.94 (d, 1H), 6.99 (d, 2H), 7.32 (m, 1H), 7.42 (d, 1H), 7.49 (m, 5H), 7.55-7.63 (m, 6H), 7.67 (s, 1H), 7.73 (d, 1H), 8.25 (d, 1H) ppm.

20

### Example 112

5-[3-(4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-propyl]-1H-tetrazole

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4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-ol (44 mg, 0.1 mmol) was treated with 4-bromobutyronitrile as described in the general procedure E followed by tetrazole formation as described in the general procedure M to give 5-[3-(4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-propyl]-1H-tetrazole (22 mg, 41% total yield).

LCMS:  $m/z$  545 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz):  $\delta$  1.22 (t, 3H), 2.08 (m, 2H), 2.55 (t, 2H), 3.95 (q, 2H), 4.09 (t, 2H), 6.94 (d, 1H), 6.97 (d, 2H), 7.12 (s, 1H), 7.41 (d, 1H), 7.47-7.57 (m, 6H), 7.62 (s, 1H), 7.78 (d, 1H), 8.14 (d, 1H) ppm.

#### 10 Example 113

5-[4-(4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxymethyl)-phenyl]-1H-tetrazole

4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-ol (44 mg, 0.1 mmol) was treated with  $\alpha$ -bromo-*p*-tolunitrile as described in the general procedure E followed by tetrazole formation as described in the general procedure M to give 5-[4-(4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxymethyl)-phenyl]-1H-tetrazole (22 mg, 37% total yield).

LCMS:  $m/z$  593 ( $M+H$ )<sup>+</sup>.

#### 20 Example 114

5-[4-(4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-phenyl]-1H-tetrazole

4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-ol (44 mg, 0.1 mmol) was treated with 4-iodobenzonitrile as described in the general procedure J followed by tetrazole formation as described in the general procedure M to give 5-[4-(4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-phenyl]-1H-tetrazole (13 mg, 22% total yield).

LCMS:  $m/z$  579 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  1.37 (t, 3H), 4.30 (q, 2H), 7.06 (dd, 1H), 7.24 (d, 2H), 7.32 (d, 1H), 7.37 (d, 1H), 7.52 (dd, 1H), 7.62 (d, 1H), 7.67 (d, 1H), 7.74 (d, 2H), 7.79-7.86 (m, 6H), 7.99 (s, 1H), 8.17 (d, 1H) ppm.

## 5 Example 115

### 2-[2-(5-Bromo-2-methoxy-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole

*Trans*-5-bromo-2-methoxycinnamic acid (257 mg, 1 mmol) was treated according to general procedure A using 2,4-dichlorophenacyl bromide to give 2-[2-(5-bromo-2-methoxy-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (195 mg, 46% yield).

10 LCMS:  $m/z$  424 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  3.98 (s, 3H), 6.99 (d, 1H), 7.26 (d, 1H), 7.49-7.56 (m, 2H), 7.61-7.66 (m, 2H), 7.75 (d, 1H), 7.79 (s, 1H), 7.95 (d, 1H) ppm.

## Example 116

### 15 4-(2,4-Dichloro-phenyl)-2-{2-[2-methoxy-5-(4-methoxy-phenylethynyl)-phenyl]-(E)-vinyl}-1H-imidazole

2-[2-(5-Bromo-2-methoxy-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (43 mg, 0.1 mmol) was treated as described in general procedure H using 1-ethynyl-4-methoxybenzene to give 4-(2,4-dichloro-phenyl)-2-{2-[2-methoxy-5-(4-methoxy-phenylethynyl)-phenyl]-(E)-vinyl}-1H-imidazole (19 mg, 39% yield).

20 LCMS:  $m/z$  475 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  3.81 (s, 3H), 3.88 (s, 3H), 6.94 (dd, 1H), 6.99 (d, 1H), 7.07 (m, 1H), 7.11 (d, 1H), 7.16 (d, 1H), 7.26 (m, 2H), 7.35 (dd, 1H), 7.44-7.48 (m, 2H), 7.63 (s, 1H), 7.72 (d, 1H), 7.83 (d, 1H) ppm.

## 25 Example 117

[4-(3-{2-[4-(2,4-Dichloro-phenyl)-1H-imidazol-2-yl]-(E)-vinyl}-4-methoxy-phenylethynyl)-phenoxy]-acetic acid methyl ester

2-[2-(5-Bromo-2-methoxy-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (43 mg, 0.1 mmol) was treated as described in general procedure H using 4-(methoxy-carbonyl-methoxy)-phenylacetylene to give [4-(3-{2-[4-(2,4-dichloro-phenyl)-1H-imidazol-2-yl]-(E)-vinyl}-4-methoxy-phenylethynyl)-phenoxy]-acetic acid methyl ester (26 mg, 49% yield).

LCMS:  $m/z$  533 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  3.78 (s, 3H), 3.98 (s, 3H), 4.50 (s, 2H), 6.94 (dd, 1H), 6.99 (d, 1H), 7.07 (m, 1H), 7.11 (d, 1H), 7.16 (d, 1H), 7.26 (m, 2H), 7.35 (dd, 1H), 7.44-7.48 (m, 2H), 7.63 (s, 1H), 7.72 (d, 1H), 7.83 (d, 1H) ppm.

**Example 118**

[4-(3-{2-[4-(2,4-Dichloro-phenyl)-1H-imidazol-2-yl]-(E)-vinyl}-4-methoxy-phenylethynyl)-phenoxy]-acetic acid

[4-(3-{2-[4-(2,4-Dichloro-phenyl)-1H-imidazol-2-yl]-(E)-vinyl}-4-methoxy-phenylethynyl)-phenoxy]-acetic acid methyl ester (20 mg, 0.037 mmol) was treated as described in general procedure F to give [4-(3-{2-[4-(2,4-dichloro-phenyl)-1H-imidazol-2-yl]-(E)-vinyl}-4-methoxy-phenyl-ethynyl)-phenoxy]-acetic acid (17 mg, 88% yield).

LCMS:  $m/z$  519 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  3.97 (s, 3H), 4.51 (s, 2H), 6.94 (dd, 1H), 6.99 (d, 1H), 7.07 (m, 1H), 7.11 (d, 1H), 7.16 (d, 1H), 7.26 (m, 2H), 7.35 (dd, 1H), 7.44-7.49 (m, 2H), 7.64 (s, 1H), 7.74 (d, 1H), 7.85 (d, 1H) ppm.

**Example 119**

[3-(3-{2-[4-(2,4-Dichloro-phenyl)-1H-imidazol-2-yl]-(E)-vinyl}-4-methoxy-phenylethynyl)-phenoxy]-acetic acid



2-[2-(5-Bromo-2-methoxy-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (43 mg, 0.1 mmol) was treated with 3-(methoxy-carbonyl-methoxy)-phenyl acetylene as described in general procedure H followed by ester hydrolysis as described in general procedure F to give [3-(3-{2-[4-(2,4-dichloro-phenyl)-1H-imidazol-2-yl]-(E)-vinyl}-4-methoxy-phenylethynyl)-phenoxy]-acetic acid (15 mg, 29% yield).

LCMS:  $m/z$  519 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  3.81 (s, 3H), 4.59 (s, 2H), 6.94 (dd, 1H), 6.99 (d, 1H), 7.07 (m, 1H), 7.11 (d, 1H), 7.16 (d, 1H), 7.26 (m, 2H), 7.35 (dd, 1H), 7.44-7.48 (m, 2H), 7.63 (s, 1H), 7.72 (d, 1H), 7.83 (d, 1H) ppm.

## 10 Example 120

[4-(3-{2-[4-(2,4-Dichloro-phenyl)-1-methyl-1H-imidazol-2-yl]-(E)-vinyl}-4-methoxy-phenylethynyl)-phenoxy]-acetic acid

[4-(3-{2-[4-(2,4-Dichloro-phenyl)-1H-imidazol-2-yl]-(E)-vinyl}-4-methoxy-phenylethynyl)-phenoxy]-acetic acid methyl ester (25 mg, 0.05 mmol) was treated with methyl iodide as described in general procedure E followed by ester hydrolysis as described in general procedure F to give [4-(3-{2-[4-(2,4-dichloro-phenyl)-1-methyl-1H-imidazol-2-yl]-(E)-vinyl}-4-methoxy-phenylethynyl)-phenoxy]-acetic acid (18 mg, 68% yield).

LCMS:  $m/z$  533 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  3.84 (s, 3H), 3.87 (s, 3H), 4.69 (s, 2H), 6.94 (dd, 1H), 6.99 (d, 1H), 7.07 (m, 1H), 7.11 (d, 1H), 7.16 (d, 1H), 7.26 (m, 2H), 7.35 (dd, 1H), 7.44-7.49 (m, 2H), 7.64 (s, 1H), 7.74 (d, 1H), 7.85 (d, 1H) ppm.

## Example 121

4-[4-(3-{2-[4-(2,4-Dichloro-phenyl)-1H-imidazol-2-yl]-(E)-vinyl}-4-methoxy-phenylethynyl)-phenoxy]-butyric acid

2-[2-(5-Bromo-2-methoxy-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (43 mg, 0.1 mmol) was treated as described in general procedure H using 4-(4-methoxy-

carbonyl-propyloxy)-phenyl acetylene followed by ester hydrolysis as described in general procedure F to give 4-[4-(3-{2-[4-(2,4-dichloro-phenyl)-1H-imidazol-2-yl]-(E)-vinyl}-4-methoxy-phenylethynyl)-phenoxy]-butyric acid (16 mg, 29% yield).

LCMS:  $m/z$  547 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  2.18 (m, 2H), 2.53 (t, 2H), 3.80 (s, 3H), 4.10 (t, 2H), 6.95 (d, 1H), 6.97 (d, 2H), 7.13 (s, 1H), 7.42 (d, 1H), 7.47-7.59 (m, 5H), 7.64 (s, 1H), 7.78 (d, 1H), 8.19 (d, 1H) ppm.

### Example 122

4-[3-(4-{2-[4-(2,4-Dichloro-phenyl)-1H-imidazol-2-yl]-(E)-vinyl}-phenylethynyl)-phenoxy]-butyric acid

2-[2-(4-Bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (40 mg, 0.1 mmol) was treated as described in general procedure H using 3-(4-methoxy-carbonyl-propyloxy)-phenyl acetylene followed by ester hydrolysis as described in general procedure F to give 4-[3-(4-{2-[4-(2,4-dichloro-phenyl)-1H-imidazol-2-yl]-(E)-vinyl}-phenylethynyl)-phenoxy]-butyric acid (14 mg, 27% yield).

LCMS:  $m/z$  517 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  2.12 (m, 2H), 2.53 (t, 2H), 4.08 (t, 2H), 6.93 (m, 1H), 7.06-7.13 (m, 3H), 7.27 (m, 1H), 7.36 (dd, 1H), 7.38 (d, 1H), 7.49 (d, 1H), 7.52-7.58 (m, 4H), 7.65 (s, 1H), 7.85 (d, 1H) ppm.

### Example 123

4-[4-(4-{2-[4-(2,4-Dichloro-phenyl)-1H-imidazol-2-yl]-(E)-vinyl}-phenylethynyl)-phenoxy]-butyric acid

2-[2-(4-Bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (40 mg, 0.1 mmol) was treated as described in general procedure H using 4-(4-methoxy-carbonyl-propyloxy)-phenylacetylene followed by ester hydrolysis as described in general procedure F to give 4-[4-(4-{2-[4-(2,4-dichloro-phenyl)-1H-imidazol-2-yl]-(E)-vinyl}-phenylethynyl)-phenoxy]-butyric acid (15 mg, 29% yield).

LCMS:  $m/z$  517 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR ( $CDCl_3$ , 400 MHz):  $\delta$  2.18 (m, 2H), 2.53 (t, 2H), 4.10 (t, 2H), 6.95 (d, 1H), 6.97 (d, 2H), 7.13 (s, 1H), 7.42 (d, 1H), 7.47-7.59 (m, 6H), 7.64 (s, 1H), 7.78 (d, 1H), 8.19 (d, 1H) ppm.

## 5 Example 124

4-(4'-(2-[4-(2,4-Dichloro-phenyl)-1-methyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-butyric acid methyl ester

4-(2,4-Dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-1-methyl-1H-imidazole (44 mg, 0.1 mmol) was demethylated as described in general procedure C and the resulting phenol intermediate was treated with methyl 4-bromobutyrate as described in the general procedure E to give 4-(4'-(2-[4-(2,4-dichloro-phenyl)-1-methyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-butyric acid methyl ester (32 mg, 61% total yield).

LCMS:  $m/z$  521 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR ( $CD_3OD$ , 400 MHz):  $\delta$  2.15 (m, 2H), 2.56 (t, 2H), 3.78 (s, 3H), 3.86 (s, 3H), 4.09 (t, 2H), 7.00 (d, 2H), 7.06 (d, 1H), 7.35 (dd, 1H), 7.48 (d, 1H), 7.55-7.67 (m, 8H), 8.01 (d, 1H) ppm.

## Example 125

4-(4'-(2-[4-(2,4-Dichloro-phenyl)-1-methyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-butyric acid

4-(4'-(2-[4-(2,4-Dichloro-phenyl)-1-methyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-butyric acid methyl ester (26 mg, 0.05 mmol) was treated as described in general procedure F to give 4-(4'-(2-[4-(2,4-dichloro-phenyl)-1-methyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-butyric acid (21 mg, 84% yield).

LCMS:  $m/z$  507 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR ( $CD_3OD$ , 400 MHz):  $\delta$  2.14 (m, 2H), 2.55 (t, 2H), 3.87 (s, 3H), 4.09 (t, 2H), 7.00 (d, 2H), 7.06 (d, 1H), 7.35 (dd, 1H), 7.47 (d, 1H), 7.56-7.66 (m, 8H), 7.99 (d, 1H) ppm.

**Example 126**

5-[3-(4'-[2-[4-(2,4-Dichloro-phenyl)-1-methyl-1H-imidazol-2-yl]-(E)-vinyl]-biphenyl-4-yloxy)-propyl]-1H-tetrazole

5            4-(2,4-Dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-1-methyl-1H-imidazole (44 mg, 0.1 mmol) was demethylated as described in general procedure C and the resulting phenol intermediate was treated with 4-bromobutyronitrile as described in the general procedure E followed by tetrazole formation as described in the general procedure L to give 5-[3-(4'-[2-[4-(2,4-dichloro-phenyl)-1-methyl-1H-imidazol-2-yl]-(E)-vinyl]-biphenyl-4-yloxy)-propyl]-1H-tetrazole (11 mg, 21% total yield).

10

LCMS:  $m/z$  531 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  2.15 (m, 2H), 2.56 (t, 2H), 3.86 (s, 3H), 4.09 (t, 2H), 7.00 (d, 2H), 7.06 (d, 1H), 7.35 (dd, 1H), 7.48 (d, 1H), 7.55-7.67 (m, 8H), 8.01 (d, 1H) ppm.

15    **Example 127**

(4'-[2-[4-(2,4-Dichloro-phenyl)-1-methyl-1H-imidazol-2-yl]-(E)-vinyl]-biphenyl-4-yloxy)-acetic acid

20            4-(2,4-Dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-1-methyl-1H-imidazole (44 mg, 0.1 mmol) was demethylated as described in general procedure C and the resulting phenol intermediate was treated with methyl bromoacetate as described in the general procedure E followed by ester hydrolysis as described in the general procedure F to give (4'-[2-[4-(2,4-dichloro-phenyl)-1-methyl-1H-imidazol-2-yl]-(E)-vinyl]-biphenyl-4-yloxy)-acetic acid (32 mg, 61% total yield).

25            LCMS:  $m/z$  479 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  3.87 (s, 3H), 4.81 (s, 2H), 7.00 (d, 2H), 7.06 (d, 1H), 7.35 (dd, 1H), 7.47 (d, 1H), 7.56-7.66 (m, 8H), 7.99 (d, 1H) ppm.

**Example 128**

5-(4'-(2-[4-(2,4-Dichloro-phenyl)-1-methyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-pentanoic acid methyl ester

4-(2,4-Dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-1-methyl-1H-imidazole (44 mg, 0.1 mmol) was treated as described in general procedure C to give the phenolic intermediate. The intermediate was treated with methyl 5-bromovalerate following the general procedure E to give 5-(4'-(2-[4-(2,4-dichloro-phenyl)-1-methyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-pentanoic acid methyl ester (31 mg, 58% total yield).

LCMS:  $m/z$  535 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (DMSO-*d*<sub>6</sub>, 400 MHz):  $\delta$  1.69 (m, 2H), 1.77 (m, 2H), 2.31 (t, 2H), 3.74 (s, 3H), 3.86 (s, 3H), 4.02 (t, 2H), 7.00 (d, 2H), 7.06 (d, 1H), 7.35 (dd, 1H), 7.48 (d, 1H), 7.55-7.67 (m, 8H), 8.01 (d, 1H) ppm.

**Example 129**

5-(4'-(2-[4-(2,4-Dichloro-phenyl)-1-methyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-pentanoic acid

5-(4'-(2-[4-(2,4-Dichloro-phenyl)-1-methyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-pentanoic acid methyl ester (27 mg, 0.05 mmol) was treated as described in general procedure F to give 5-(4'-(2-[4-(2,4-dichloro-phenyl)-1-methyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-pentanoic acid (21 mg, 82% yield).

LCMS:  $m/z$  521 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (DMSO-*d*<sub>6</sub>, 400 MHz):  $\delta$  1.67 (m, 2H), 1.74 (m, 2H), 2.30 (t, 2H), 3.85 (s, 3H), 4.02 (t, 2H), 7.02 (d, 2H), 7.31 (d, 1H), 7.49 (dd, 1H), 7.57 (d, 1H), 7.63-7.67 (m, 5H), 7.78 (d, 2H), 7.96 (s, 1H), 8.25 (d, 1H) ppm.

**Example 130**

4-(4'-(2-[4-(2,4-Dichloro-phenyl)-1-methyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxymethyl)-benzoic acid

4-(2,4-Dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-1-methyl-1H-imidazole (44 mg, 0.1 mmol) was demethylated as described in general procedure C and the resulting phenol intermediate was treated with methyl 4-(bromomethyl)benzoate as described in the general procedure E followed by ester hydrolysis as described in the general procedure F to give 4-(4'-(2-[4-(2,4-dichloro-phenyl)-1-methyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxymethyl)-benzoic acid (25 mg, 44% total yield).

LCMS:  $m/z$  555 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  3.87 (s, 3H), 5.25 (s, 2H), 7.00 (d, 2H), 7.06 (d, 1H), 7.27 (d, 2H), 7.35 (dd, 1H), 7.47 (d, 1H), 7.56-7.66 (m, 8H), 7.74 (d, 2H), 7.99 (d, 1H) ppm.

**Example 131**

2-Bromo-4-(4'-(2-[4-(2,4-dichloro-phenyl)-1-methyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-benzoic acid

4-(2,4-Dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-1-methyl-1H-imidazole (44 mg, 0.1 mmol) was demethylated as described in general procedure C and the resulting phenol intermediate was treated with methyl methyl 4-fluoro-2-bromobenzoate as described in the general procedure E followed by ester hydrolysis as described in the general procedure F to give 2-bromo-4-(4'-(2-[4-(2,4-dichloro-phenyl)-1-methyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-benzoic acid (24 mg, 39% total yield).

LCMS:  $m/z$  620 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  3.87 (s, 3H), 7.00 (d, 2H), 7.06 (d, 1H), 7.27 (d, 2H), 7.35 (dd, 1H), 7.47 (d, 1H), 7.56-7.66 (m, 7H), 7.74 (d, 2H), 8.02 (d, 1H) ppm.

**Example 132**

4-(4'-(2-[4-(2,4-Dichloro-phenyl)-1-(2,2,2-trifluoro-ethyl)-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-butyric acid

2-[2-(4-Bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (79 mg, 0.2 mmol) was treated with 1-iodo-2,2,2-trifluoroethane as described in general procedure E followed by Suzuki coupling with 4-methoxybenzeneboronic acid as described in general procedure B. The resulting intermediate was demethylated as described in general procedure C, treated with methyl 4-bromobutyrate as described in general procedure E followed by ester hydrolysis as described in general procedure F to give 4-(4'-(2-[4-(2,4-dichloro-phenyl)-1-(2,2,2-trifluoro-ethyl)-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-butyric acid (19 mg, 16% yield).

LCMS:  $m/z$  575 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (DMSO-*d*<sub>6</sub>, 400 MHz):  $\delta$  1.96 (m, 2H), 2.41 (t, 2H), 4.04 (t, 2H), 4.72 (q, 2H), 7.04 (d, 2H), 7.32 (d, 1H), 7.50 (dd, 1H), 7.57 (d, 1H), 7.64-7.67 (m, 5H), 7.79 (d, 2H), 7.96 (s, 1H), 8.27 (d, 1H) ppm.

**Example 133**

4-(4'-(2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-ylamino)-butyric acid

2-[2-(4-Bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazole (43 mg, 0.1 mmol) was treated with 4-aminobenzeneboronic acid as described in general procedure B. The resulting intermediate was treated with methyl 4-bromobutyrate as described in general procedure E followed by ester hydrolysis as described in general procedure F to give 4-(4'-(2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-ylamino)-butyric acid (19 mg, 36% total yield).

LCMS:  $m/z$  520 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (DMSO-*d*<sub>6</sub>, 400 MHz):  $\delta$  1.40 (t, 3H), 1.96 (m, 2H), 2.41 (t, 2H), 4.04 (m, 2H), 4.36 (q, 2H), 7.04 (d, 2H), 7.32 (d, 1H), 7.50 (dd, 1H), 7.57 (d, 1H), 7.64-7.67 (m, 5H), 7.79 (d, 2H), 7.96 (s, 1H), 8.27 (d, 1H) ppm.

**Example 134**

N-(4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yl)-succinamic acid

2-[2-(4-Bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazole (43 mg, 0.1 mmol) was treated with 4-aminobenzeneboronic acid as described in general procedure B. The resulting intermediate was heated in anhydrous DMF (0.1-0.5 M) with 2 equivalents of succinic anhydride and 2 equivalents of DIEA at 100 °C for 2 hours. At completion, the reaction mixture was worked up with EtOAc and water. The combined organic layer was washed, condensed and purified by silica gel chromatography to afford N-(4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yl)-succinamic acid (18 mg, 33% total yield).

LCMS:  $m/z$  534 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (DMSO-*d*<sub>6</sub>, 400 MHz):  $\delta$  1.40 (t, 3H), 2.45-2.58 (m, 4H), 4.36 (q, 2H), 7.04 (d, 2H), 7.32 (d, 1H), 7.50 (dd, 1H), 7.57 (d, 1H), 7.64-7.67 (m, 5H), 7.79 (d, 2H), 7.96 (s, 1H), 8.27 (d, 1H) ppm.

**Example 135**

4-(4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxymethyl)-benzoic acid

4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-ol (44 mg, 0.1 mmol) was treated with methyl 4-(bromomethyl)benzoate as described in the general procedure E followed by ester hydrolysis as described in the general procedure F to give 4-(4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxymethyl)-benzoic acid (31 mg, 54% total yield).

LCMS:  $m/z$  569 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (DMSO-*d*<sub>6</sub>, 400 MHz):  $\delta$  1.37 (t, 3H), 4.30 (q, 2H), 5.25 (s, 2H), 7.06 (dd, 1H), 7.24 (d, 2H), 7.32 (d, 1H), 7.37 (d, 1H), 7.52 (dd, 1H), 7.62 (d, 1H), 7.67 (d, 1H), 7.74 (d, 2H), 7.79-7.86 (m, 6H), 7.99 (s, 1H), 8.17 (d, 1H) ppm.

**Example 136**



4-(4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxymethyl)-phenyl]-acetic acid

4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-ol (44 mg, 0.1 mmol) was treated with methyl 4-(bromomethyl)phenylacetate as described in the general procedure E followed by ester hydrolysis as described in the general procedure F to give 4-(4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxymethyl)-phenyl]-acetic acid (22 mg, 37% total yield).

LCMS:  $m/z$  583 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (DMSO-*d*<sub>6</sub>, 400 MHz):  $\delta$  1.39 (t, 3H), 3.21 (s, 2H), 4.32 (q, 2H), 5.25 (s, 2H), 7.06 (dd, 1H), 7.24 (d, 2H), 7.32 (d, 1H), 7.37 (d, 1H), 7.52 (dd, 1H), 7.62 (d, 1H), 7.67 (d, 1H), 7.74 (d, 2H), 7.79-7.86 (m, 6H), 7.99 (s, 1H), 8.19 (d, 1H) ppm.

**Example 137**

4-(4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-benzoic acid methyl ester

4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-ol (44 mg, 0.1 mmol) was treated as described in general procedure J using methyl 4-iodobenzoate to give 4-(4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-benzoic acid methyl ester (26 mg, 46% yield).

LCMS:  $m/z$  569 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (DMSO-*d*<sub>6</sub>, 400 MHz):  $\delta$  1.40 (t, 3H), 3.81 (s, 3H), 4.31 (q, 2H), 7.07 (dd, 1H), 7.25 (d, 2H), 7.33 (d, 1H), 7.38 (d, 1H), 7.52 (dd, 1H), 7.63 (d, 1H), 7.68 (d, 1H), 7.74 (d, 2H), 7.80-7.87 (m, 6H), 8.00 (s, 1H), 8.19 (d, 1H) ppm.

**Example 138**

4-(4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-benzoic acid

4-(4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-benzoic acid methyl ester (18 mg, 0.03 mmol) was treated as described in general procedure F to give 4-(4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-benzoic acid (14 mg, 81% yield).

- 5 LCMS:  $m/z$  555 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (DMSO-*d*<sub>6</sub>, 400 MHz):  $\delta$  1.37 (t, 3H), 4.30 (q, 2H), 7.06 (dd, 1H), 7.24 (d, 2H), 7.32 (d, 1H), 7.37 (d, 1H), 7.52 (dd, 1H), 7.62 (d, 1H), 7.67 (d, 1H), 7.74 (d, 2H), 7.79-7.86 (m, 6H), 7.99 (s, 1H), 8.17 (d, 1H) ppm.

### Example 139

- 10 3-(4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-benzoic acid

- 15 4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-ol (44 mg, 0.1 mmol) was treated as described in general procedure J using methyl 3-iodobenzoate followed by ester hydrolysis as described in general procedure F to give 3-(4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-benzoic acid (21 mg, 38% yield).

LCMS:  $m/z$  555 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (DMSO-*d*<sub>6</sub>, 400 MHz):  $\delta$  1.38 (t, 3H), 4.31 (q, 2H), 7.06 (dd, 1H), 7.24 (d, 2H), 7.32 (d, 1H), 7.37 (d, 1H), 7.52 (dd, 1H), 7.62 (d, 1H), 7.67 (m, 1H), 7.74 (d, 2H), 7.81-7.89 (m, 6H), 7.99 (s, 1H), 8.17 (d, 1H) ppm.

20

### Example 140

4-(4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-2-fluoro-benzoic acid

- 25 4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-ol (44 mg, 0.1 mmol) was treated as described in general procedure J using methyl 2-fluoro-4-bromobenzoate followed by ester hydrolysis as described in general procedure

F to give 4-(4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-2-fluoro-benzoic acid (20 mg, 34% yield).

LCMS:  $m/z$  573 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (DMSO-*d*<sub>6</sub>, 400 MHz):  $\delta$  1.37 (t, 3H), 4.32 (q, 2H), 7.06 (dd, 1H), 7.24 (d, 2H), 7.32 (d, 1H), 7.37 (d, 1H), 7.52 (dd, 1H), 7.62 (d, 1H), 7.67 (m, 1H), 7.74 (d, 2H), 7.81-7.89 (m, 5H), 8.01 (s, 1H), 8.19 (d, 1H) ppm.

#### Example 141

4-(4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-2-methyl-benzoic acid

4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-ol (44 mg, 0.1 mmol) was treated as described in general procedure J using methyl 4-bromo-2-methyl-benzoate followed by ester hydrolysis as described in general procedure F to give 4-(4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-2-methyl-benzoic acid (17 mg, 30% yield).

LCMS:  $m/z$  569 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (DMSO-*d*<sub>6</sub>, 400 MHz):  $\delta$  1.37 (t, 3H), 2.39 (s, 3H), 4.31 (q, 2H), 7.06 (dd, 1H), 7.24 (d, 2H), 7.32 (d, 1H), 7.37 (d, 1H), 7.52 (dd, 1H), 7.62 (d, 1H), 7.67 (m, 1H), 7.74 (d, 2H), 7.80-7.87 (m, 5H), 7.99 (s, 1H), 8.14 (d, 1H) ppm.

#### Example 142

5-(4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-furan-2-carboxylic acid methyl ester

4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-ol (44 mg, 0.1 mmol) was treated with 5-bromofuroic acid methyl ester as described in general procedure J to give 5-(4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-furan-2-carboxylic acid methyl ester (21 mg, 38% yield).

LCMS:  $m/z$  559 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (DMSO-*d*<sub>6</sub>, 400 MHz):  $\delta$  1.37 (t, 3H), 3.79 (s, 3H), 4.27 (q, 2H), 6.86 (d, 1H), 7.12 (d, 2H), 7.33 (d, 1H), 7.48 (dd, 1H), 7.57 (d, 1H), 7.63 (d, 1H), 7.68 (d, 2H), 7.74 (m, 3H), 7.82 (d, 2H), 7.95 (s, 1H), 8.24 (d, 1H) ppm.

## 5 Example 143

5-(4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-furan-2-carboxylic acid

5-(4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-furan-2-carboxylic acid methyl ester (18 mg, 0.03 mmol) was treated as described in general procedure F to give 5-(4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-furan-2-carboxylic acid (14 mg, 80% yield).

LCMS:  $m/z$  545 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (DMSO-*d*<sub>6</sub>, 400 MHz):  $\delta$  1.35 (t, 3H), 4.26 (q, 2H), 6.85 (d, 1H), 7.12 (d, 2H), 7.32 (d, 1H), 7.48 (dd, 1H), 7.56 (d, 1H), 7.62 (d, 1H), 7.68 (d, 2H), 7.73 (m, 3H), 7.81 (d, 2H), 7.95 (s, 1H), 8.23 (d, 1H) ppm.

## Example 144

5-(4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-nicotinic acid

4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-ol (44 mg, 0.1 mmol) was treated as described in general procedure J using ethyl 5-bromonicotinate followed by ester hydrolysis as described in general procedure F to give 5-(4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-nicotinic acid (13 mg, 23% yield).

LCMS:  $m/z$  556 (M+H)<sup>+</sup>.

## Example 145

5-(4'-(2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-thiophene-2-carboxylic acid

4'-(2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-ol (44 mg, 0.1 mmol) was treated with methyl 5-bromothiophene-2-carboxylate as described in general procedure J followed by ester hydrolysis as described in general procedure F to give 5-(4'-(2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-thiophene-2-carboxylic acid (14 mg, 25% yield).

LCMS:  $m/z$  561 (M+H)<sup>+</sup>.

10 **Example 146**

2-(4'-(2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-thiazole-4-carboxylic acid

4'-(2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-ol (44 mg, 0.1 mmol) was treated with ethyl 2-bromothiazole-4-carboxylate as described in general procedure J followed by ester hydrolysis as described in general procedure F to give 2-(4'-(2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-thiazole-4-carboxylic acid (12 mg, 21% yield).

LCMS:  $m/z$  562 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (DMSO-*d*<sub>6</sub>, 400 MHz):  $\delta$  1.42 (t, 3H), 4.10 (q, 2H), 6.86 (d, 2H), 7.46 (d, 1H), 7.58 (d, 2H), 7.66 (dd, 1H), 7.70 (d, 2H), 7.82 (d, 2H), 7.85-7.92 (m, 3H), 8.00 (s, 1H), 8.19 (s, 1H) ppm.

**Example 147**

6-(4'-(2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-naphthalene-2-carboxylic acid

4'-(2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-ol (44 mg, 0.1 mmol) was treated with methyl 6-bromo-2-naphthoate as described in general procedure J followed by ester hydrolysis as described in general procedure F to

give 6-(4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-naphthalene-2-carboxylic acid (21 mg, 35% yield).

LCMS:  $m/z$  605 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (DMSO-*d*<sub>6</sub>, 400 MHz):  $\delta$  1.38 (t, 3H), 4.31 (q, 2H), 7.06 (dd, 1H), 7.24 (d, 2H), 7.32 (d, 1H), 7.37 (d, 1H), 7.52 (dd, 1H), 7.62 (d, 1H), 7.67 (m, 1H), 7.74 (d, 2H), 7.73-7.89 (m, 8H), 7.99 (s, 1H), 8.17 (d, 1H) ppm.

### Example 148

2-(4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yl)-1H-benzoimidazole-5-carboxylic acid

2-[2-(4-Bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazole (127 mg, 0.3 mmol) was treated with 4-formylphenylboronic acid as described in general procedure B. The resulting intermediate was heated in anhydrous EtOH (0.1-0.5 M) with 1.5 equivalents of methyl 3,4-diaminobenzoate at 100 °C for 5 to 6 hours. At completion, the reaction mixture was worked up with EtOAc and water. The combined organic layer was washed, condensed and purified by silica gel chromatography to afford the ester intermediate which was then hydrolyzed as described in general procedure F to afford 2-(4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yl)-1H-benzoimidazole-5-carboxylic acid (40 mg, 23% total yield).

LCMS:  $m/z$  579 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  1.40 (t, 3H), 4.36 (q, 2H), 7.04 (d, 2H), 7.32 (d, 1H), 7.42-7.51 (m, 3H), 7.57 (d, 1H), 7.64-7.67 (m, 6H), 7.79 (d, 2H), 7.96 (s, 1H), 8.27 (d, 1H) ppm.

### Example 149

2-(4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yl)-3-ethyl-3H-benzoimidazole-5-carboxylic acid

2-(4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yl)-1H-benzoimidazole-5-carboxylic acid (29 mg, 0.05 mmol) was treated with 2

equivalents of ethyl bromide as described in general procedure E followed by ester hydrolysis as described in general procedure F to afford 2-(4'-(2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yl)-3-ethyl-3H-benzoimidazole-5-carboxylic acid (14 mg, 44% yield).

- 5 LCMS:  $m/z$  607 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  1.43 (m, 6H), 4.35 (m, 4H), 7.04 (d, 2H), 7.32 (d, 1H), 7.42-7.51 (m, 3H), 7.57 (d, 1H), 7.64-7.67 (m, 6H), 7.79 (d, 2H), 7.96 (s, 1H), 8.25 (d, 1H) ppm.

### Example 150

- 10 2-(4-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-phenyl)-1H-benzoimidazole-5-carboxylic acid

- 15 *Trans*-4-formylcinnamic acid (88 mg, 0.5 mmol) was treated with 2,4-dichlorophenacyl bromide as described in general procedure A followed by reaction with ethyl bromide as described in general procedure E. The resulting intermediate was heated in anhydrous EtOH (0.1-0.5 M) with 1.5 equivalents of methyl-3,4-diaminobenzoate at 100 °C for 5 to 6 hours. At completion, the reaction mixture was worked up with EtOAc and water. The combined organic layer was washed, condensed and purified by silica gel chromatography to afford the ester intermediate which was then hydrolyzed as described in general procedure F to afford 2-(4-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-phenyl)-1H-benzoimidazole-5-carboxylic acid (48 mg, 19% total yield).

- 20 LCMS:  $m/z$  503 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  1.38 (t, 3H), 4.34 (q, 2H), 7.04 (d, 2H), 7.32 (d, 1H), 7.42-7.47 (m, 2H), 7.57 (d, 1H), 7.64-7.68 (m, 3H), 7.79 (d, 2H), 7.96 (s, 1H), 8.27 (d, 1H) ppm.

25

### Example 151

2-Bromo-4-(4'-(2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-benzoic acid methyl ester

4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-ol (44 mg, 0.1 mmol) was treated as described in general procedure I using methyl 2-bromo-4-fluorobenzoate to give 2-bromo-4-(4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-benzoic acid methyl ester (44 mg, 68% yield).

- 5 LCMS:  $m/z$  648 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (DMSO-*d*<sub>6</sub>, 400 MHz):  $\delta$  1.40 (t, 3H), 3.82 (s, 3H), 4.29 (q, 2H), 7.07 (dd, 1H), 7.25 (d, 2H), 7.33 (d, 1H), 7.38 (d, 1H), 7.52 (dd, 1H), 7.63 (d, 1H), 7.68 (d, 1H), 7.74 (d, 2H), 7.80-7.87 (m, 5H), 8.00 (s, 1H), 8.17 (d, 1H) ppm.

## 10 Example 152

2-Bromo-4-(4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-benzoic acid

- 15 2-Bromo-4-(4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-benzoic acid methyl ester (33 mg, 0.05 mmol) was treated as described in general procedure F to give 2-bromo-4-(4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-benzoic acid (24 mg, 75% yield).

LCMS:  $m/z$  634 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (DMSO-*d*<sub>6</sub>, 400 MHz):  $\delta$  1.37 (t, 3H), 4.30 (q, 2H), 7.06 (dd, 1H), 7.24 (d, 2H), 7.32 (d, 1H), 7.37 (d, 1H), 7.52 (dd, 1H), 7.62 (d, 1H), 7.67 (d, 1H), 7.74 (d, 2H), 7.80-7.86 (m, 5H), 7.99 (s, 1H), 8.17 (d, 1H) ppm.

20

## Example 153

4-(4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-2-trifluoromethyl-benzoic acid methyl ester

- 25 4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-ol (44 mg, 0.1 mmol) was treated as described in general procedure I using methyl 4-fluoro-2-(trifluoromethyl)benzoate to give 4-(4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-



imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-2-trifluoromethyl-benzoic acid methyl ester (46 mg, 73% yield).

LCMS:  $m/z$  637 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (DMSO-*d*<sub>6</sub>, 400 MHz):  $\delta$  1.38 (t, 3H), 3.83 (s, 3H), 4.31 (q, 2H), 7.27 (d, 2H), 7.31 (dd, 1H), 7.35 (d, 1H), 7.45 (d, 1H), 7.49 (dd, 1H), 7.58 (d, 1H), 7.63 (d, 1H), 7.73 (d, 2H), 7.81-7.84 (m, 4H), 7.91 (d, 1H), 7.96 (s, 1H), 8.26 (d, 1H) ppm.

#### Example 154

4-(4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-2-trifluoromethyl-benzoic acid

4-(4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-2-trifluoromethyl-benzoic acid methyl ester (32 mg, 0.05 mmol) was treated as described in general procedure F to give 4-(4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-2-trifluoromethyl-benzoic acid (26 mg, 85% yield).

LCMS:  $m/z$  623 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (DMSO-*d*<sub>6</sub>, 400 MHz):  $\delta$  1.36 (t, 3H), 4.29 (q, 2H), 7.26 (d, 2H), 7.30 (dd, 1H), 7.34 (d, 1H), 7.45 (d, 1H), 7.49 (dd, 1H), 7.57 (d, 1H), 7.62 (d, 1H), 7.73 (d, 2H), 7.82-7.85 (m, 4H), 7.90 (d, 1H), 7.95 (s, 1H), 8.24 (d, 1H) ppm.

#### Example 155

4-(4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-2-nitro-benzoic acid methyl ester

4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-ol (87 mg, 0.2 mmol) was treated as described in general procedure I using methyl 4-fluoro-2-nitrobenzoate to give 4-(4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-2-nitro-benzoic acid methyl ester (96 mg, 78% yield).

LCMS:  $m/z$  614 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (DMSO- $d_6$ , 400 MHz):  $\delta$  1.38 (t, 3H), 3.84 (s, 3H), 4.28 (q, 2H), 7.20 (d, 1H), 7.30 (d, 2H), 7.35 (d, 1H), 7.48 (dd, 1H), 7.58 (d, 1H), 7.63 (d, 1H), 7.73 (d, 2H), 7.82-7.84 (m, 4H), 7.97 (s, 1H), 8.17 (dd, 1H), 8.24 (d, 1H), 8.53 (d, 1H) ppm.

5

**Example 156**

4-(4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-2-nitro-benzoic acid

10 4-(4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-2-nitro-benzoic acid methyl ester (31 mg, 0.05 mmol) was treated as described in general procedure F to give 4-(4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-2-nitro-benzoic acid (24 mg, 81% yield).

15 LCMS:  $m/z$  600 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (DMSO- $d_6$ , 400 MHz):  $\delta$  1.37 (t, 3H), 4.27 (q, 2H), 7.19 (d, 1H), 7.30 (d, 2H), 7.34 (d, 1H), 7.48 (dd, 1H), 7.57 (d, 1H), 7.62 (d, 1H), 7.73 (d, 2H), 7.82-7.84 (m, 4H), 7.95 (s, 1H), 8.16 (dd, 1H), 8.24 (d, 1H), 8.51 (d, 1H) ppm.

**Example 157**

20 2-Amino-4-(4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-benzoic acid methyl ester

4-(4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-2-nitro-benzoic acid methyl ester (61 mg, 0.1 mmol) was treated as described in general procedure K to afford 2-amino-4-(4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-benzoic acid methyl ester (44 mg, 76% yield).

25 LCMS:  $m/z$  584 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (DMSO- $d_6$ , 400 MHz):  $\delta$  1.43 (t, 3H), 3.81 (s, 3H), 4.45 (q, 2H), 6.92 (d, 1H), 7.19 (d, 2H), 7.47 (dd, 1H), 7.51 (d, 1H), 7.67 (dd, 1H), 7.77-7.83 (m, 8H), 8.01 (d, 1H), 8.10-8.24 (m, 2H) ppm.

**Example 158**

2-Amino-4-(4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-benzoic acid

5            2-Amino-4-(4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-benzoic acid methyl ester (12 mg, 0.02 mmol) was treated as described in general procedure F to afford 2-amino-4-(4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-benzoic acid (8 mg, 72% yield).

LCMS:  $m/z$  570 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (DMSO-*d*<sub>6</sub>, 400 MHz):  $\delta$  1.41 (t, 3H), 4.41 (q, 2H), 6.91 (d, 1H), 7.18 (d, 2H), 7.46 (dd, 1H), 7.51 (d, 1H), 7.65 (dd, 1H), 7.76-7.83 (m, 8H), 8.01 (d, 1H), 8.10-8.22 (m, 2H) ppm.

**Example 159**

15            4-(4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-2-methanesulfonylamino-benzoic acid methyl ester

2-Amino-4-(4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-benzoic acid methyl ester (29 mg, 0.05 mmol) was treated as described in general procedure L using methanesulfonyl chloride to afford 4-(4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-2-methanesulfonylamino-benzoic acid methyl ester (22 mg, 67% yield).

LCMS:  $m/z$  662 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (DMSO-*d*<sub>6</sub>, 400 MHz):  $\delta$  1.39 (t, 3H), 3.07 (s, 3H), 3.77 (s, 3H), 4.32 (q, 2H), 6.98 (d, 1H), 7.27 (d, 2H), 7.37 (d, 1H), 7.51 (dd, 1H), 7.60 (d, 1H), 7.65 (d, 1H), 7.73 (d, 2H), 7.77 (dd, 1H), 7.80-7.85 (m, 4H), 7.98 (s, 1H), 8.01 (d, 1H), 8.26 (d, 1H) ppm.

**Example 160**

4-(4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-2-methanesulfonylamino-benzoic acid

4-(4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-2-methanesulfonylamino-benzoic acid methyl ester (20 mg, 0.03 mmol) was  
5 treated as described in general procedure F to give 4-(4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-2-methanesulfonylamino-benzoic acid (14 mg, 73% yield).

LCMS:  $m/z$  648 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (DMSO-*d*<sub>6</sub>, 400 MHz):  $\delta$  1.38 (t, 3H), 3.07 (s, 3H), 4.29 (q, 2H), 6.97 (d, 1H), 7.24 (d, 2H), 7.35 (d, 1H), 7.50 (dd, 1H), 7.59 (d, 1H),  
10 7.64 (d, 1H), 7.73 (d, 2H), 7.77 (dd, 1H), 7.80-7.86 (m, 4H), 7.97 (s, 1H), 8.01 (d, 1H), 8.25 (d, 1H) ppm.

**Example 161**

3-Amino-4-(4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-benzoic acid

4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-ol (435 mg, 1 mmol) was treated as described in general procedure I using methyl 4-fluoro-3-nitrobenzoate to give the nitro compound intermediate, which was then reduced as described in general procedure K to give the ester (327 mg, 56% yield). The resulted  
20 ester (29 mg, 0.05 mmol) was treated as described in general procedure F to afford 3-amino-4-(4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-benzoic acid (22 mg, 77% yield).

LCMS:  $m/z$  570 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (DMSO-*d*<sub>6</sub>, 400 MHz):  $\delta$  1.41 (t, 3H), 4.42 (q, 2H), 6.91 (d, 1H), 7.18 (d, 2H), 7.46 (dd, 1H), 7.51 (d, 1H), 7.65 (dd, 1H), 7.76-7.83 (m, 8H),  
25 8.01 (d, 1H), 8.10-8.22 (m, 2H) ppm.

**Example 162**

4-(4'-(2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-3-methanesulfonylamino-benzoic acid

4'-(2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-ol (435 mg, 1 mmol) was treated as described in general procedure I using methyl 4-fluoro-3-nitrobenzoate to give the nitro compound intermediate, which was then reduced as described in general procedure K to give the ester (327 mg, 56% total yield). The resulted ester (59 mg, 0.1 mmol) was treated as described in general procedure L using methanesulfonyl chloride to give methanesulfonamide, which was then hydrolyzed as described in general procedure F to give 4-(4'-(2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-3-methanesulfonylamino-benzoic acid (26 mg, 41% yield).

LCMS:  $m/z$  648 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (DMSO-*d*<sub>6</sub>, 400 MHz):  $\delta$  1.38 (t, 3H), 3.07 (s, 3H), 4.29 (q, 2H), 6.97 (d, 1H), 7.23 (d, 2H), 7.35 (d, 1H), 7.50 (dd, 1H), 7.59 (d, 1H), 7.64 (d, 1H), 7.73 (d, 2H), 7.77 (dd, 1H), 7.79-7.85 (m, 4H), 7.97 (s, 1H), 8.01 (d, 1H), 8.24 (d, 1H) ppm.

**Example 163**

4-(4'-(2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-3-trifluoromethanesulfonylamino-benzoic acid

4'-(2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-ol (435 mg, 1 mmol) was treated as described in general procedure I using methyl 4-fluoro-3-nitrobenzoate to give the nitro compound intermediate, which was then reduced as described in general procedure K to give the ester (327 mg, 56% yield). The resulted ester (59 mg, 0.1 mmol) was treated as described in general procedure L using trifluoromethanesulfonic acid anhydride to give trifluoromethanesulfonamide, which was then hydrolyzed as described in general procedure F to give 4-(4'-(2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-3-trifluoromethanesulfonylamino-benzoic acid (26 mg, 37% yield).

LCMS:  $m/z$  702 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (DMSO- $d_6$ , 400 MHz):  $\delta$  1.38 (t, 3H), 4.29 (q, 2H), 6.98 (d, 1H), 7.12 (d, 2H), 7.36 (d, 1H), 7.41 (dd, 1H), 7.60 (d, 1H), 7.64 (d, 1H), 7.74 (d, 2H), 7.77 (dd, 1H), 7.79-7.85 (m, 4H), 7.98 (s, 1H), 8.01 (d, 1H), 8.22 (d, 1H) ppm.

5

**Example 164**

5-(4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-2-methanesulfonylamino-benzoic acid

4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-ol  
10 (435 mg, 1 mmol) was treated as described in general procedure I using methyl 2-amino-5-bromobenzoate to give the ester (245 mg, 42% yield). The ester (59 mg, 0.1 mmol) was treated as described in general procedure L using methanesulfonyl chloride to give the methanesulfonamide, which was then hydrolyzed as described in general procedure F to give 5-(4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-  
15 biphenyl-4-yloxy)-2-methanesulfonylamino-benzoic acid (25 mg, 39% yield).

LCMS:  $m/z$  648 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (DMSO- $d_6$ , 400 MHz):  $\delta$  1.37 (t, 3H), 3.17 (s, 3H), 4.28 (q, 2H), 7.14 (d, 2H), 7.34 (d, 1H), 7.44 (dd, 1H), 7.50 (dd, 1H), 7.58 (d, 1H), 7.60-7.66 (m, 3H), 7.71 (d, 2H), 7.77 (d, 2H), 7.83 (d, 2H), 7.97 (s, 1H), 8.24 (d, 1H) ppm.

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**Example 165**

5-(4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-2-trifluoromethanesulfonylamino-benzoic acid

4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-ol  
25 (435 mg, 1 mmol) was treated as described in general procedure I using methyl 2-amino-5-bromobenzoate to give the ester (245 mg, 42% yield). The ester (59 mg, 0.1 mmol) was treated as described in general procedure L using trifluoromethanesulfonic anhydride to give trifluoromethanesulfonamide, which was then hydrolyzed as described

in general procedure F to give 5-(4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-2-trifluoromethanesulfonylamino-benzoic acid (31 mg, 44% total yield).

LCMS:  $m/z$  702 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (DMSO-*d*<sub>6</sub>, 400 MHz):  $\delta$  1.38 (t, 3H), 4.29 (q, 2H), 7.08 (d, 2H), 7.25 (dd, 1H), 7.36 (d, 1H), 7.51 (m, 2H), 7.60 (d, 1H), 7.62 (d, 1H), 7.66 (d, 1H), 7.71 (d, 2H), 7.74 (d, 2H), 7.83 (d, 2H), 7.98 (s, 1H), 8.22 (d, 1H) ppm.

### Example 165

4-(4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-butyric acid 2,2-dimethyl-propionyloxymethyl ester

To a solution of 4-(4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-butyric acid (52 mg, 0.1 mmol) in anhydrous DMF (5 mL) is added chloromethyl pivalate (30 mg, 0.2 mmol) followed by freshly ground K<sub>2</sub>CO<sub>3</sub> (56 mg, 0.4 mmol). The reaction mixture is heated at 65°C under nitrogen for 2 to 4 hours. At completion, the mixture is then diluted with water/EtOAc and the layers separated. The aqueous layer is further extracted with EtOAc, and the organic layers combined and dried over Na<sub>2</sub>SO<sub>4</sub>. The solvent is removed *in vacuo* and the residue is purified by silica gel chromatography to afford (56 mg, 88% yield) 4-(4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-butyric acid 2,2-dimethyl-propionyloxymethyl ester.

LCMS:  $m/z$  635 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (DMSO-*d*<sub>6</sub>, 400 MHz):  $\delta$  1.11 (s, 9H), 1.42 (t, 3H), 1.99 (m, 2H), 2.54 (t, 2H), 4.03 (t, 2H), 4.41 (q, 2H), 5.70 (s, 2H), 7.01 (d, 2H), 7.46 (d, 1H), 7.65 (dd, 1H), 7.68 (d, 2H), 7.74 (d, 2H), 7.84 (d, 2H), 7.85 (s, 1H), 8.01 (d, 1H), 8.05 (d, 1H), 8.19 (s, 1H) ppm.

### Example 167

4-(4-Chloro-phenyl)-2-[2-(4-ethoxy-phenyl)-(E)-vinyl-1H-imidazole

4-(4-Chloro-phenyl)-2-[2-(4-ethoxy-phenyl)-(E)-vinyl]-1H-imidazole (258 mg, 79%) was synthesized using *trans*-4-ethoxycinnamic acid (192 mg, 1 mmol) and 4-chlorophenacyl bromide (233 mg 1 mmol) according to general procedure A.

LCMS:  $m/z$  325 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz):  $\delta$  1.43 (t, 2H), 1.62 (d, 1H), 4.08 (q, 2H), 6.88 (d, 1H), 6.95 (d, 2H), 7.33 (d, 1H), 7.51 (d, 2H), 7.52 (d, 2H), 7.54 (s, 1H), 7.66 (d, 1H), 7.93 (s, 1H) ppm.

### Example 168

#### 4-(2,4-Difluoro-phenyl)-2-[2-(4-ethoxy-phenyl)-(E)-vinyl]-1H-imidazole

4-(2,4-Difluoro-phenyl)-2-[2-(4-ethoxy-phenyl)-(E)-vinyl]-1H-imidazole (249 mg, 76%) was prepared using *trans*-4-ethoxycinnamic acid (192 mg, 1 mmol) and 4-fluorophenacyl bromide (217 mg 1 mmol) according to general procedure A.

LCMS:  $m/z$  327 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz):  $\delta$  1.43 (t, 2H), 1.62 (d, 1H), 4.08 (q, 2H), 6.88 (d, 1H), 6.95 (d, 2H), 7.33 (d, 1H), 7.51 (d, 2H), 7.52 (d, 1H), 7.54 (s, 1H), 7.66 (d, 1H), 7.93 (s, 1H) ppm.

### Example 169

#### 2-[2-(4-Ethoxy-phenyl)-(E)-vinyl]-4-(4-methoxy-phenyl)-1H-imidazole

2-[2-(4-Ethoxy-phenyl)-(E)-vinyl]-4-(4-methoxy-phenyl)-1H-imidazole (221 mg, 69%) was prepared according to general procedure A using *trans*-4-ethoxycinnamic acid (198 mg, 1 mmol) and 4-methoxyphenacyl bromide (229 mg, 1 mmol).

LCMS:  $m/z$  321 (M+H)<sup>+</sup>.

### Example 170

2-[2-(4-Ethoxy-phenyl)-(E)-vinyl]-4-(2,3,4-trichloro-phenyl)-1H-imidazole



2-[2-(4-Ethoxy-phenyl)-(E)-vinyl]-4-(2,3,4-trichloro-phenyl)-1H-imidazole (279 mg, 70%) was prepared according to general procedure A using *trans*-4-ethoxycinnamic acid (198 mg, 1 mmol) and 2,3,4-trichlorophenacyl bromide (302 mg, 1 mmol).

LCMS:  $m/z$  393 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz):  $\delta$  1.43 (t, 2H), 1.62 (d, 1H), 4.08 (q, 2H), 6.38 (d, 1H), 6.81 (d, 1H), 6.90 (d, 1H), 7.28 (d, 2H), 7.38 (d, 1H), 7.48 (d, 2H), 7.74 (d, 1H), 9.1 (d, 1H) ppm.

### Example 171

#### 4-[2-(4-Naphthalen-1yl)-1H-imidazole-2-yl]-(E)-vinyl]-phenol

4-[2-(4-Naphthalen-1yl)-1H-imidazole-2-yl]-(E)-vinyl]-phenol (241 mg, 78%) was prepared according to general procedure A using *trans*-4-hydroxycinnamic acid (164 mg, 1mmol) and 1-naphthleneacylbromide (249 mg, 1 mmol).

LCMS:  $m/z$  313 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz):  $\delta$  6.69 (s, 1H), 6.95 (d, 2H), 7.42 (d, 1H), 7.55 (d, 2H), 7.63 (d, 2H), 7.65 (d, 2H), 7.89-7.77 (m, 4H) ppm.

### Example 172

#### 4-{2-[4-(4-Chloro-phenyl)-5-phenyl-1H-imidazole-2-yl]-(E)-vinyl}-phenol

4-{2-[4-(4-Chloro-phenyl)-5-phenyl-1H-imidazole-2-yl]-(E)-vinyl}-phenol (285 mg, 76%) was prepared according to general procedure A using *trans*-4-hydroxycinnamic acid (164 mg, 1mmol) and 2-bromo-1- (4-chlorophenyl)-2-phenylethan 1-one (309 mg, 1 mmol).

LCMS:  $m/z$  373 (M+H)<sup>+</sup>.

### Example 173

4-Biphenyl-4-yl-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-1H-imidazole

4-Biphenyl-4-yl-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-1H-imidazole (281 mg, 80%) was prepared according to general procedure A using *trans*-4-methoxycinnamic acid (178 mg, 1mmol) and 2-bromo-4-phenylacetophenone (275 mg, 1 mmol).

LCMS:  $m/z$  353 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz):  $\delta$  3.78 (s, 3H), 6.95-6.93 (m, 2H), 7.36-7.33 (m, 2H), 7.48-7.44 (m, 2H), 7.55-7.53 (m, 2H), 7.71-7.64 (m, 6H), 7.90-7.88 (m, 2H) ppm.

#### Example 174

##### (4-{2-[2-(4-Methoxy-phenyl)-(E)-vinyl]-1H-imidazole-4-yl}-phenyl-diazene

(4-{2-[2-(4-Methoxy-phenyl)-(E)-vinyl]-1H-imidazole-4-yl}-phenyl-diazene (291 mg, 77%) was prepared according to general procedure A using *trans* 4-methoxycinnamic acid (178 mg, 1mmol) and 2-bromo-4-phenylazoacetophenone (303 mg, 1 mmol).

LCMS:  $m/z$  381 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz):  $\delta$  3.77 (s, 3H), 6.80 (d, 2H), 6.85 (d, 2H), 7.27 (s, 1H), 7.36 (d, 1H), 7.53 (m, 4H), 7.83 (d, 2H), 7.91 (d, 2H), 7.93 (d, 2H) ppm.

#### Example 175

##### {4-Biphenyl-4-yl-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-imidazole-1yl}-acetic acid methyl ester

4-Biphenyl-4-yl-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-1H-imidazole (352 mg, 1 mmol) was treated with methyl bromoacetate (153 mg, 1 mmol) according to general procedure E to give {4-biphenyl-4-yl-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-imidazole-1yl}-acetic acid methyl ester (375 mg, 88%).

LCMS:  $m/z$  425 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR ( $CDCl_3$ , 400 MHz):  $\delta$  3.78 (s, 3H), 3.96 (s, 3H), 5.17 (s, 2H), 6.95-6.93 (m, 2H), 7.36-7.33 (m, 2H), 7.48-7.44 (m, 2H), 7.55-7.53 (m, 2H), 7.71-7.64 (m, 6H), 7.90-7.88 (m, 2H) ppm.

## 5 Example 176

### {4-Biphenyl-4-yl-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-imidazole-1yl}-acetic acid

{4-Biphenyl-4-yl-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-imidazole-1yl}-acetic acid methyl ester (212 mg, 0.5 mmol) was hydrolyzed according to general procedure F to give {4-biphenyl-4-yl-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-imidazole-1yl}-acetic acid (212 mg, 80%).

LCMS:  $m/z$  411 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR ( $CDCl_3$ , 400 MHz):  $\delta$  3.78 (s, 3H), 5.17 (s, 2H), 6.95-6.93 (m, 2H), 7.36-7.33 (m, 2H), 7.48-7.44 (m, 2H), 7.55-7.53 (m, 2H), 7.71-7.64 (m, 6H), 7.90-7.88 (m, 2H) ppm.

## 15 Example 177

### 4-(4-Chloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-5-p-tolyl-1H-imidazole

4-(4-Chloro-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-5-p-tolyl-1H-imidazole (299 mg, 75%) was prepared according to general procedure A using *trans*-4-methoxycinnamic acid (178 mg, 1mmol) and 2-bromo-1-(4-chlorophenyl)-2-(4-methylphenyl)-ethan-1-one (323 mg, 1 mmol).

LCMS:  $m/z$  401 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR ( $CDCl_3$ , 400 MHz):  $\delta$  2.40 (s, 3H), 3.85 (s, 3H), 6.89 (d, 1H), 6.95 (d, 2H), 7.22 (d, 2H), 7.37 (d, 1H), 7.52-7.50 (m, 4H), 7.64-7.53 (m, 4H) ppm.

## Example 178

25 2-{4-Biphenyl-4-yl-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-imidazole-1yl}-N-(1-naphthalen-1-yl-ethyl)-acetamide

{4-Biphenyl-4-yl-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-imidazole-1yl}-acetic acid (410 mg, 1 mmol) was coupled with DL-1-(1-naphthyl)-ethyl amine (171 mg, 1 mmol) following general procedure G to give 2-{4-biphenyl-4-yl-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-imidazole-1yl}-N-(1-naphthalen-1-yl-ethyl)-acetamide (497 mg, 88%).

5 LCMS:  $m/z$  564 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz):  $\delta$  1.59 (d, 3H), 3.85 (s, 3H), 4.73 (d, 2H), 5.91 (d, 1H), 5.97 (m, 1H), 6.59 (d, 1H), 6.89 (d, 2H), 7.14 (s, 1H), 7.22-7.41 (m, 2H), 7.50-7.42 (m, 7H), 7.60-7.42 (m, 4H), 7.64-7.62 (m, 3H), 7.71 (d, 1H), 7.82 (d, 1H), 8.04 (d, 1H) ppm.

#### 10 Example 179

##### 4-(4-Bromo-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-1H-imidazole

4-(4-Bromo-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-1H-imidazole (281 mg, 79%) was prepared according to general procedure A using *trans*-4-methoxycinnamic acid (178 mg, 1mmol) and 2,4-dibromo acetophenone (278 mg, 1 mmol).

15 LCMS:  $m/z$  356 (M+H)<sup>+</sup>.

#### Example 180

##### Diethyl-(4-{2-[2-(4-methoxy-phenyl)-(E)-vinyl]-1H-imidazol-4yl}-phenyl)-amine

20 Diethyl-(4-{2-[2-(4-methoxy-phenyl)-(E)-vinyl]-1H-imidazol-4yl}-phenyl)-amine (247 mg, 72%) was prepared according to general procedure A using *trans*-4-methoxycinnamic acid (178 mg, 1 mmol) and 2-bromo-1-(4-diethylamino-phenyl)-ethan-1-one (270 mg, 1 mmol).

LCMS:  $m/z$  348 (M+H)<sup>+</sup>.

#### 25 Example 181

2-[2-(4-Methoxy-phenyl)-(E)-vinyl]-4-pentafluorophenyl-1H-imidazole

2-[2-(4-Methoxy-phenyl)-(E)-vinyl]-4-pentafluorophenyl-1H-imidazole (271 mg, 74%) was prepared according to general procedure A using *trans*-4-methoxycinnamic acid (178 mg, 1mmol) and bromoacetyl pentafluorobenzene (288 mg, 1 mmol).

- 5 LCMS: 367 (M+H)<sup>+</sup>. <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz): δ 3.86 (s, 3H), 6.38 (d, 1H), 6.58 (d, 2H), 7.33 (d, 1H), 7.51 (d, 2H), 7.93 (s, 1H) ppm.

**Example 182**4-(3',5'-Dichloro-biphenyl-4-yl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-1H-imidazole

- 10 4-(3',5'-Dichloro-biphenyl-4-yl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-1H-imidazole (313 mg, 74%) was prepared according to general procedure A using *trans*-4-methoxycinnamic acid (178 mg, 1mmol) and 2-bromo-4-(3,5-dichloro-phenyl)acetophenone (344 mg, 1 mmol).

- 15 LCMS: 421 (M+H)<sup>+</sup>. <sup>1</sup>H NMR (DMSO-*d*<sub>6</sub>, 400 MHz): δ 3.78 (s, 3H), 6.94-6.96 (m, 2H), 7.31-7.34 (m, 2H), 7.44-7.48 (m, 2H), 7.55 (d, 2H), 7.61-7.71 (m, 4H), 7.90 (s, 1H), 12.40 (s, 1H) ppm.

**Example 183**2-[2-(4-Methoxy-phenyl)-(E)-vinyl]-4-(4-pentyl-phenyl)-1H-imidazole

- 20 2-[2-(4-Methoxy-phenyl)-(E)-vinyl]-4-(4-pentyl-phenyl)-1H-imidazole (240 mg, 70%) was prepared according to general procedure A using *trans*-4-methoxycinnamic acid (178 mg, 1mmol) and 2-bromo-1-(4-pentyl phenyl)-ethan-1-one (269 mg, 1 mmol).

LCMS: *m/z* 347 (M+H)<sup>+</sup>.

- 25 **Exempl 184**

4-{2-[2-(4-Methoxy-phenyl)-(E)-vinyl]-1H-imidazol-4-yl}-benzoic acid phenyl ester

4-{2-[2-(4-Methoxy-phenyl)-(E)-vinyl]-1H-imidazol-4-yl}-benzoic acid phenyl ester (259 mg, 65%) was prepared according to general procedure A using *trans*-4-methoxycinnamic acid (178 mg, 1mmol) and 2-bromo-(4-phenyl benzoate) acetophenone (319 mg, 1 mmol).

LCMS:  $m/z$  397 (M+H)<sup>+</sup>.

**Example 185**4-(3', 5'-Dichloro-biphenyl-4-yl)-1-ethyl-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-1H-imidazole

4-(3',5'-Dichloro-biphenyl-4-yl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-1H-imidazole (421 mg, 1 mmol) was treated with bromoethane (109 mg, 1 mmol) according to general procedure E to give 4-(3',5'-dichloro-biphenyl-4-yl)-1-ethyl-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-1H-imidazole (401 mg, 89%).

LCMS:  $m/z$  449 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (DMSO-*d*<sub>6</sub>, 400 MHz):  $\delta$  1.21 (t, 3H), 3.78 (s, 3H), 3.93 (q, 2H), 6.94-6.96 (m, 2H), 7.31-7.34 (m, 2H), 7.44-7.48 (m, 2H), 7.55 (d, 2H), 7.61-7.71 (m, 4H), 7.90 (s, 1H), 12.40 (s, 1H) ppm.

**Example 186**4-(4-tert-Butyl-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-1H-imidazole

4-(4-tert-Butyl-phenyl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-1H-imidazole (218 mg, 66%) was prepared according to general procedure A using *trans*-4-methoxycinnamic acid (178 mg, 1mmol) and 4-(tert-butyl)-phenacyl bromide (255 mg, 1 mmol).

LCMS:  $m/z$  333 (M+H)<sup>+</sup>.

**Example 187**

2-[2-(4-Methoxy-phenyl)-(E)-vinyl]-4-(3-trifluoromethyl-phenyl)-1H-imidazole

2-[2-(4-Methoxy-phenyl)-(E)-vinyl]-4-(3-trifluoromethyl-phenyl)-1H-imidazole (229 mg, 67%) was prepared according to general procedure A using *trans*-4-methoxycinnamic acid (178 mg, 1mmol) and 2-bromo-1-(3-trifluoromethyl)-phenyl-1-ethanone (267 mg, 1 mmol).

LCMS:  $m/z$  345 (M+H)<sup>+</sup>.

**Example 188**4-(2,3-Dihydro-benzo[1,4]dioxin-5-yl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-1H-imidazole

4-(2,3-Dihydro-benzo[1,4]dioxin-5-yl)-2-[2-(4-methoxy-phenyl)-(E)-vinyl]-1H-imidazole (219 mg, 65%) was prepared according to general procedure A using *trans*-4-methoxycinnamic acid (178 mg, 1 mmol) and 2-bromo-1-(2-3-dihydro-1-4-benzodioxepin-6-yl)-ethan-1-one (257 mg, 1 mmol).

LCMS:  $m/z$  335 (M+H)<sup>+</sup>.

**Example 189**2-[2-(4-Bromo-phenyl)-(E)-vinyl]-1-ethyl-4-(4-methoxy-phenyl)-1H-imidazole

2-[2-(4-Bromo-phenyl)-(E)-vinyl]-1-ethyl-4-(4-methoxy-phenyl)-1H-imidazole (249 mg, 65%) was prepared according to general procedure A using *trans*-4-bromocinnamic acid (227 mg, 1mmol) and 2-bromo-4-methoxyacetophenone (229 mg, 1 mmol) and obtained 2-[2-(4-bromo-phenyl)-(E)-vinyl]-4-(4-methoxy-phenyl)-1H-imidazole (355 mg, 1 mmol) was treated with bromoethane (109 mg, 1 mmol) following general procedure E.

LCMS:  $m/z$  384 (M+H)<sup>+</sup>.

**Example 190**

2-[2-(4-Bromo-phenyl)-(E)-vinyl]-1-ethyl-4-(4-cyano-phenyl)-1H-imidazole

2-[2-(4-Bromo-phenyl)-(E)-vinyl]-1-ethyl-4-(4-cyano-phenyl)-1H-imidazole (319 mg, 84%) was prepared according to general procedure A using *trans*-4-bromocinnamic acid (227 mg, 1 mmol) and 4-cyanophenacyl bromide (224 mg, 1 mmol) and obtained 2-

5 [2-(4-bromo-phenyl)-(E)-vinyl]-4-(4-cyano-phenyl)-1H-imidazole (350 mg, 1 mmol) was treated with bromoethane (109 mg, 1 mmol) following general procedure E.

LCMS:  $m/z$  379 (M+H)<sup>+</sup>.

**Example 191**

10 4-(4'-{2-[1-Ethyl-4-(4-methoxy-phenyl)-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-butyric acid methyl ester

2-[2-(4-Bromo-phenyl)-(E)-vinyl]-1-ethyl-4-(4-methoxy-phenyl)-1H-imidazole (383 mg, 1 mmol) was coupled with 4-hydroxyphenylboronic acid (137 mg, 1 mmol) following general procedure B and obtained 4'-{2-[1-ethyl-4-(4-methoxy-phenyl)-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-ol (396 mg, 1 mmol) was alkylated with methyl 4-bromobutyrate (181 mg, 1 mmol) following general procedure E to give 4-(4'-{2-[1-ethyl-4-(4-methoxy-phenyl)-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-butyric acid methyl ester (351 mg, 70%).

15

LCMS:  $m/z$  497 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz): 1.51 (t, 3H), 2.16 (m, 2H), 2.57 (m, 2H), 3.70 (s, 3H), 3.83 (s, 3H), 4.09 (q, 2H), 4.13 (t, 2H), 6.92 (d, 2H), 6.94-6.97 (m, 1H), 7.53-7.61(m, 8H), 7.75 (d, 2H), 7.77 (d, 2H) ppm.

20

**Example 192**

25 4-(4'-{2-[1-Ethyl-4-(4-methoxy-phenyl)-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-butyric acid

4-(4'-{2-[1-Ethyl-4-(4-methoxy-phenyl)-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-butyric acid methyl ester (248 mg, 0.5 mmol) was hydrolyzed according to



general procedure F to give 4-(4'-{2-[1-ethyl-4-(4-methoxy-phenyl)-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-butyric acid (192 mg, 80%).

LCMS:  $m/z$  483 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (DMSO, 400 MHz): 1.15 (t, 3H), 1.36 (m, 2H), 1.97 (m, 2H), 2.42 (t, 2H), 3.77 (s, 3H), 4.0 (q, 2H), 4.2 (t, 2H), 6.93 (d, 2H), 7.01 (d, 2H), 7.28 (d, 1H), 7.47 (d, 1H), 7.62-7.66 (m, 4H), 7.75-7.77 (m, 4H) ppm.

### Example 193

#### 2-[2-(4-Bromo-phenyl)-(E)-vinyl]-1-ethyl-4-(3-trifluoromethyl-phenyl)-1H-imidazole

2-[2-(4-Bromo-phenyl)-(E)-vinyl]-1-ethyl-4-(3-trifluoromethyl-phenyl)-1H-imidazole (314 mg, 75%) was prepared according to general procedure A using *trans*-4-bromocinnamic acid (227 mg, 1 mmol) and 2-bromo-1-(3-trifluoromethyl)-phenyl-1-ethanone (267 mg, 1 mmol) and obtained 2-[2-(4-bromo-phenyl)-(E)-vinyl]-4-(3-trifluoromethyl-phenyl)-1H-imidazole (393 mg, 1 mmol) was treated with bromoethane (109 mg, 1 mmol) following general procedure E.

LCMS:  $m/z$  422 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz):  $\delta$  1.52 (t, 3H), 4.12 (q, 2H), 6.91 (d, 2H), 7.31 (d, 1H), 7.41 (d, 2H), 7.43-7.49 (m, 2H), 7.68 (d, 2H), 7.99 (d, 2H), 8.08 (s, 1H) ppm.

### Example 194

#### 4-(4'-[2-[1-Ethyl-4-(3-trifluoromethyl-phenyl)-1H-imidazol-2-yl]-(E)-vinyl]-biphenyl-4-yloxy)-butyric acid methyl ester

2-[2-(4-Bromo-phenyl)-(E)-vinyl]-1-ethyl-4-(3-trifluoromethyl-phenyl)-1H-imidazole (421 mg, 1 mmol) was coupled with 4-hydroxy phenyl boronic acid (137 mg, 1 mmol) following general procedure B and obtained 4'-[2-[1-ethyl-4-(3-trifluoromethyl-phenyl)-1H-imidazol-2-yl]-(E)-vinyl]-biphenyl-4-ol (434 mg, 1 mmol) was alkylated with methyl 4-bromobutyrate (181 mg, 1 mmol) following general procedure E to give 4-(4'-[2-[1-ethyl-

4-(3-trifluoromethyl-phenyl)-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-butyric acid methyl ester (432 mg, 80%).

LCMS:  $m/z$  535 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz): 1.55 (t, 3H), 2.16 (m, 2H), 2.58 (m, 2H), 3.70 (s, 3H), 4.07 (q, 2H), 4.16 (t, 2H), 6.91 (s, 1H), 6.98 (d, 2H), 7.30 (s, 1H), 7.48 (d, 2H), 7.54-7.56 (m, 4H), 7.61 (d, 1H), 7.78 (s, 1H), 8.01 (d, 2H), 8.09 (s, 1H) ppm.

### Example 195

10 4-(4'-[2-[1-Ethyl-4-(3-trifluoromethyl-phenyl)-1H-imidazol-2-yl]-(E)-vinyl]-biphenyl-4-yloxy)-butyric acid

4-(4'-[2-[1-Ethyl-4-(3-trifluoromethyl-phenyl)-1H-imidazol-2-yl]-(E)-vinyl]-biphenyl-4-yloxy)-butyric acid methyl ester (267 mg, 0.5 mmol) was hydrolyzed according to general procedure F to give 4-(4'-[2-[1-ethyl-4-(3-trifluoromethyl-phenyl)-1H-imidazol-2-yl]-(E)-vinyl]-biphenyl-4-yloxy)-butyric acid (216 mg, 83%).

15 LCMS:  $m/z$  521 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (DMSO-*d*<sub>6</sub>, 400 MHz): δ 1.15 (t, 3H), 1.36 (m, 2H), 1.97 (m, 2H), 2.42 (t, 2H), 4.0 (q, 2H), 4.2 (t, 2H), 6.93 (d, 2H), 7.01 (d, 2H), 7.28 (d, 1H), 7.47 (d, 1H), 7.62-7.66 (m, 4H), 7.75-7.77 (m, 4H) ppm.

### Example 196

20 2-[2-(4-Bromo-phenyl)-(E)-vinyl]-4-(4-tert-butyl-phenyl)-1-ethyl-1H-imidazole

2-[2-(4-Bromo-phenyl)-(E)-vinyl]-4-(4-tert-butyl-phenyl)-1-ethyl-1H-imidazole (316 mg, 77%) was prepared according to general procedure A using *trans*-4-bromocinnamic acid (227 mg, 1mmol) and 4-(tert-butyl)-phenacyl bromide (255 mg, 1 mmol) and obtained 2-[2-(4-bromo-phenyl)-(E)-vinyl]-4-(4-tert-butyl-phenyl)-1H-imidazole (381 mg, 1 mmol) was treated with bromoethane (109 mg, 1 mmol) following general procedure E.

LCMS:  $m/z$  410 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz):  $\delta$  1.41 (s, 9H), 1.57 (t, 3H), 4.16 (q, 2H), 6.98 (d, 2H), 7.33 (s, 1H), 7.47-7.50 (m, 4H), 7.55 (d, 1H), 7.57 (d, 1H), 7.73 (d, 1H), 7.82 (d, 1H) ppm.

## 5 Example 197

### 4-(4'-{2-[4-tert-Butyl-phenyl]-1-ethyl-iH-imidazol-2-yl}-(E)-vinyl}-biphenyl-4-yloxy)-butyric acid

**Step 1:** 2-[2-(4-Bromo-phenyl)-(E)-vinyl]-4-(4-tert-butyl-phenyl)-1-ethyl-1H-imidazole (409 mg, 1 mmol) was coupled with 4-hydroxyphenylboronic acid (137 mg, 1 mmol) following general procedure B and obtained 4'-{2-[4-(4-tert-Butyl-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-ol (422 mg, 1 mmol) was alkylated with methyl 4-bromobutyrate (181 mg, 1 mmol) following general procedure E to give 4-(4'-{2-[4-tert-butyl-phenyl]-1-ethyl-iH-imidazol-2-yl}-(E)-vinyl)-biphenyl-4-yloxy)-butyric acid methyl ester (411 mg, 78%).

LCMS:  $m/z$  523 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz):  $\delta$  1.41 (s, 9H), 1.57 (t, 3H), 2.23 (m, 2H), 2.65 (t, 2H), 3.78 (s, 3H), 4.14 (q, 2H), 4.18 (t, 2H), 6.99 (s, 1H), 7.05 (d, 2H), 7.33 (s, 1H), 7.48 (d, 2H), 7.61-7.67 (m, 4H), 7.69 (d, 2H), 7.78 (s, 1H), 7.83 (d, 2H) ppm.

**Step 2:** 4-(4'-{2-[4-tert-Butyl-phenyl]-1-ethyl-iH-imidazol-2-yl}-(E)-vinyl)-biphenyl-4-yloxy)-butyric acid methyl ester (261 mg, 0.5 mmol) was hydrolyzed according to general procedure F to give 4-(4'-{2-[4-tert-butyl-phenyl]-1-ethyl-iH-imidazol-2-yl}-(E)-vinyl)-biphenyl-4-yloxy)-butyric acid (218 mg, 85%).

LCMS:  $m/z$  509 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (DMSO-*d*<sub>6</sub>, 400 MHz):  $\delta$  0.89 (s, 9H), 1.30 (t, 3H), 1.50 (m, 2H), 2.17 (t, 2H), 4.06 (q, 2H), 4.10 (t, 2H), 6.82 (d, 2H), 6.93 (d, 2H), 7.14 (s, 1H), 7.39-7.41 (m, 4H), 7.43 (d, 1H), 7.54 (d, 2H), 7.71 (d, 2H), 7.75 (s, 1H) ppm.

## Example 198

2-[2-(4-Bromo-phenyl)-(E)-vinyl]-1-ethyl-4-(4-trifluoromethyl-phenyl)-1H-imidazole

2-[2-(4-Bromo-phenyl)-(E)-vinyl]-1-ethyl-4-(4-trifluoromethyl-phenyl)-1H-imidazole (372 mg, 88%) was prepared according to general procedure A using *trans*-4-bromocinnamic acid (227 mg, 1mmol) and 2-bromo-1-(4-trifluoromethyl)-phenyl-1-ethanone (267 mg, 1 mmol) and obtained 2-[2-(4-bromo-phenyl)-(E)-vinyl]-4-(4-trifluoromethyl-phenyl)-1H-imidazole (393 mg, 1 mmol) was treated with bromoethane (109 mg, 1 mmol) following general procedure E.

LCMS: 422 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz): δ 1.52 (t, 3H), 4.11 (q, 2H), 6.91 (d, 1H), 7.31 (d, 1H), 7.41 (d, 2H), 7.43 (d, 2H), 7.51 (d, 1H), 7.61-7.68 (m, 2H), 7.68 (s, 1H), 7.93 (d, 1H) ppm.

**Example 199**4-(-4'-{2-[1-Ethyl-4-(4-trifluoromethyl-phenyl)-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-butyric acid

Step 1: 2-[2-(4-Bromo-phenyl)-(E)-vinyl]-1-ethyl-4-(4-trifluoromethyl-phenyl)-1H-imidazole (421 mg, 1 mmol) was coupled with 4-hydroxyphenylboronic acid (137 mg, 1 mmol) following general procedure B and obtained 4'-{2-[1-ethyl-4-(4-trifluoromethyl-phenyl)-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-ol (434 mg, 1 mmol) was alkylated with methyl 4-bromobutyrate (181 mg, 1 mmol) following general procedure E to give 4-(-4'-{2-[1-ethyl-4-(4-trifluoromethyl-phenyl)-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-butyric acid methyl ester (409 mg, 77%).

LCMS: *m/z* 535 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz): 1.51 (t, 3H), 2.17 (m, 2H), 2.59 (m, 2H), 3.71 (s, 3H), 4.06 (q, 2H), 4.15 (t, 2H), 6.92 (s, 1H), 6.99 (d, 2H), 7.32 (s, 1H), 7.54-7.59 (m, 4H), 7.61-7.64 (m, 2H), 7.74 (d, 1H), 7.78 (s, 2H), 7.95 (d, 2H) ppm.

Step 2: 4-(-4'-{2-[1-Ethyl-4-(4-trifluoromethyl-phenyl)-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-butyric acid methyl ester (267 mg, 0.5 mmol) was hydrolyzed according to general procedure F to give 4-(-4'-{2-[1-ethyl-4-(4-trifluoromethyl-phenyl)-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-butyric acid (209 mg, 80%).

LCMS:  $m/z$  521 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (DMSO- $d_6$ , 400 MHz):  $\delta$  1.37 (t, 3H), 1.98 (m, 2H), 2.40 (t, 2H), 4.02 (q, 2H), 4.25 (t, 2H), 7.02 (d, 2H), 7.04 (s, 1H), 7.34 (d, 1H), 7.59 (d, 1H), 7.65-7.72 (m, 4H), 7.74 -7.80 (m, 4H), 7.97 (s, 1H), 8.03 (d, 1H) ppm.

## 5 Example 200

4-(-4'-{2-[1-Ethyl-4-(4-cyano-phenyl)-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-butyric acid

**Step 1:** 2-[2-(4-Bromo-phenyl)-(E)-vinyl]-1-ethyl-4-(4-cyano-phenyl)-1H-imidazole (378 mg, 1 mmol) was coupled with 4-hydroxyphenylboronic acid (137 mg, 1 mmol) following general procedure B and obtained 4'-{2-[1-ethyl-4-(4-cyanophenyl)-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-ol (391 mg, 1 mmol) was alkylated with methyl 4-bromobutyrate (181 mg, 1 mmol) following general procedure E to give 4-(-4'-{2-[1-ethyl-4-(4-cyanophenyl)-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-butyric acid methyl ester (352 mg, 71%).

LCMS:  $m/z$  492 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz): 1.51 (t, 3H), 2.16 (m, 2H), 2.57 (m, 2H), 3.83 (s, 3H), 4.09 (q, 2H), 4.13 (t, 2H), 6.92 (d, 2H), 6.94-6.97 (m, 1H), 7.53-7.61(m, 8H), 7.75 (d, 2H), 7.77 (d, 2H) ppm

**Step 2:** 4-(-4'-{2-[1-Ethyl-4-(4-cyano-phenyl)-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-butyric acid methyl ester (246 mg, 0.5 mmol) was hydrolyzed according to general procedure F to give 4-(-4'-{2-[1-ethyl-4-(4-cyano-phenyl)-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-butyric acid (197 mg, 82%).

LCMS:  $m/z$  478 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (DMSO- $d_6$ , 400 MHz): 1.15 (t, 3H), 1.36 (m, 2H), 1.97 (m, 2H), 2.42 (t, 2H), 4.0 (q, 2H), 4.2 (t, 2H), 6.93 (d, 2H), 7.01(d, 2H), 7.28 (d, 1H), 7.47 (d, 1H), 7.62-7.66 (m, 4H), 7.75 -7.77 (m, 4H) ppm.

## Example 201

2-[2-(4-Bromo-phenyl)-(E)-vinyl]-1-ethyl-4-(4-chloro-phenyl)-1H-imidazole

2-[2-(4-Bromo-phenyl)-(E)-vinyl]-1-ethyl-4-(4-chloro-phenyl)-1H-imidazole (292 mg, 75%) was prepared according to general procedure A using *trans*-4-bromocinnamic acid (227 mg, 1 mmol) and 4-chlorophenacyl bromide (233 mg, 1 mmol) and obtained 2-[2-(4-bromo-phenyl)-(E)-vinyl]-4-(4-chloro-phenyl)-1H-imidazole (359 mg, 1 mmol) was  
5 treated with bromoethane (109 mg, 1 mmol) following general procedure E.

LCMS:  $m/z$  388 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz):  $\delta$  1.47 (t, 3H), 4.12 (q, 2H), 6.90 (d, 2H), 7.33 (s, 1H), 7.35-7.40 (m, 2H), 7.41-7.42 (m, 2H), 7.48 (d, 1H), 7.50 (d, 1H), 7.76 (d, 2H) ppm

## 10 Example 202

4-(-4'-{2-[1-Ethyl-4-(4-chloro-phenyl)-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-butyric acid

Step 1: 2-[2-(4-Bromo-phenyl)-(E)-vinyl]-1-ethyl-4-(4-chloro-phenyl)-1H-imidazole (387 mg, 1 mmol) was coupled with 4-hydroxyphenylboronic acid (137 mg, 1 mmol) following general procedure B and obtained 4'-{2-[1-ethyl-4-(4-chloro-phenyl)-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-ol (401 mg, 1 mmol) was alkylated with methyl 4-bromobutyrate (181 mg, 1 mmol) following general procedure E to give 4-(-4'-{2-[1-ethyl-4-(4-chloro-phenyl)-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-butyric acid methyl ester (381 mg, 76%).  
15

LCMS:  $m/z$  501 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz): 1.51 (t, 3H), 2.16 (m, 2H), 2.58 (m, 2H), 3.70 (s, 3H), 4.06 (q, 2H), 4.16 (t, 2H), 6.96-6.98 (m, 2H), 7.17-7.19 (m, 2H), 7.33-7.39 (m, 2H), 7.40-7.42 (m, 2H), 7.54-7.60 (m, 4H), 7.68 (s, 1H), (d, 2H) ppm.  
20

Step 2: 4-(-4'-{2-[1-Ethyl-4-(4-chloro-phenyl)-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-butyric acid methyl ester (251 mg, 0.5 mmol) was hydrolyzed according to general procedure F to give 4-(-4'-{2-[1-ethyl-4-(4-chloro-phenyl)-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-butyric acid (196 mg, 80%).  
25

LCMS:  $m/z$  487 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (DMSO-*d*<sub>6</sub>, 400 MHz): 1.15 (t, 3H), 1.39 (m, 2H), 1.98 (m, 2H), 2.42 (t, 2H), 4.05 (q, 2H), 4.30 (t, 2H), 7.02 (d, 2H), 7.18 (s, 1H), 7.42 (d, 1H), 7.46 (d, 1H), 7.57-7.70 (m, 4H), 7.79 -7.97 (m, 4H) ppm.

## 5 Example 203

### 4-{2-[2-(4-Bromo-phenyl)-(E)-vinyl]-1-ethyl-1H-imidazol-4-yl}-benzoic acid methyl ester

4-{2-[2-(4-Bromo-phenyl)-(E)-vinyl]-1-ethyl-1H-imidazol-4-yl}-benzoic acid methyl ester (306 mg, 75%) was prepared according to general procedure A using *trans*-4-bromocinnamic acid (227 mg, 1 mmol) and 4-(-2-bromoacetyl)benzoic acid methyl ester (257 mg, 1 mmol) and obtained 4-{2-[2-(4-bromo-phenyl)-(E)-vinyl]-1H-imidazol-4-yl}-benzoic acid methyl ester (383 mg, 1 mmol) was treated with bromoethane (109 mg, 1 mmol) following general procedure E.

LCMS:  $m/z$  412 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz):  $\delta$  1.52 (t, 3H), 3.92 (s, 3H), 4.12 (q, 2H), 6.87 (s, 1H), 6.91 (s, 1H), 7.34 (d, 2H), 7.41-7.43 (m, 2H), 7.49-7.51(m, 2H), 7.64 (d, 1H), 7.88 (d, 1H), 8.06 (d, 1H) ppm.

## Example 204

### 4-(1-Ethyl-2-{2-[4'-(3-Methoxycarbonyl-propoxy)-biphenyl-4-yl]-1H-imidazol-4-yl}-benzoic acid

Step 1: 4-{2-[2-(4-Bromo-phenyl)-(E)-vinyl]-1-ethyl-1H-imidazol-4-yl}-benzoic acid methyl ester (411 mg, 1 mmol) was coupled with 4-hydroxyphenylboronic acid (137 mg, 1 mmol) following general procedure B and obtained 4-{1-ethyl-2-[2-(4-hydroxy-biphenyl-4-yl)-(E)-vinyl]-1H-imidazol-4-yl}-benzoic acid methyl ester (424 mg, 1 mmol) was alkylated with methyl 4-bromobutyrate (181 mg, 1 mmol) following general procedure E to give 4-(1-ethyl-2-{2-[4'-(3-methoxycarbonyl-propoxy)-biphenyl-4-yl]-1H-imidazol-4-yl}-benzoic acid methyl ester (404 mg, 77%).

LCMS:  $m/z$  525 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz): 1.50 (t, 3H), 2.16 (m, 2H), 2.58 (m, 2H), 3.70 (s, 3H), 3.92 (s, 3H), 4.06 (q, 2H), 4.15 (t, 2H), 6.92 (s, 1H), 6.96-6.98 (m, 2H), 7.34 (s, 1H), 7.35-7.61 (m, 4H), 7.63 (s, 1H), 7.74 (s, 1H), 7.78 (s, 1H), 7.92 (d, 2H), 8.07 (d, 2H) ppm.

- 5        Step 2:        4-(1-Ethyl-2-{2-[4'-(3-Methoxycarbonyl-propoxy)-biphenyl-4-yl]-1H-imidazol-4-yl})-benzoic acid methyl ester (262 mg, 0.5 mmol) was hydrolyzed according to general procedure F to give 4-(1-ethyl-2-{2-[4'-(3-methoxycarbonyl-propoxy)-biphenyl-4-yl]-1H-imidazol-4-yl})-benzoic acid (189 mg, 64%).

- 10        LCMS:  $m/z$  497 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (DMSO-*d*<sub>6</sub>, 400 MHz): 1.36 (t, 3H), 1.96 (m, 2H), 2.37 (m, 2H), 4.03 (q, 2H), 4.23 (t, 2H), 7.02 (d, 2H), 7.27 (s, 1H), 7.31 (s, 1H), 7.52 (d, 1H), 7.56 (d, 1H), 7.63 (d, 2H), 7.78 (d, 2H), 7.90 7.95 (m, 4H) ppm.

### Example 205

- 15        4-(4'-{2-[1-Ethyl-4-(4-methylcarbamoyl-phenyl)-1H-imidazol-2yl]-(E)-vinyl}-biphenyl-4-yloxy)-butyric acid

Step 1: 4-{2-[2-(4-Bromo-phenyl)-(E)-vinyl]-1-ethyl-1H-imidazol-4-yl}-benzoic acid (397 mg, 1 mmol) was coupled with methylamine according to general procedure G to give 4-{2-[2-(4-bromo-phenyl)-(E)-vinyl]-1-ethyl-1H-imidazol-4-yl}-N-methyl-benzamide.

- 20        4-{2-[2-(4-Bromo-phenyl)-(E)-vinyl]-1-ethyl-1H-imidazol-4-yl}-N-methyl-benzamide (410 mg, 1 mmol) was coupled with 4-hydroxyphenylboronic acid (137 mg, 1 mmol) following general procedure B and obtained 4-{1-ethyl-2-[2-(4'-hydroxy-biphenyl-4-yl)-(E)-vinyl]-1H-imidazol-4-yl}-N-methyl-benzamide (423 mg, 1 mmol) was alkylated with methyl 4-bromobutyrate (181 mg, 1 mmol) following general procedure E to give 4-(4'-{2-[1-ethyl-4-(4-methylcarbamoyl-phenyl)-1H-imidazol-2yl]-(E)-vinyl}-biphenyl-4-yloxy)-butyric acid methyl ester (406 mg, 78%).
- 25

LCMS:  $m/z$  524 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (DMSO-*d*<sub>6</sub>, 400 MHz): 1.40 (t, 3H), 2.01 (m, 2H), 2.79 (d, 2H), 3.33 (s, 3H), 3.61 (s, 3H), 4.05 (q, 2H), 4.25 (t, 2H), 7.03 (d, 2H), 7.32 (d, 1H), 7.57 (d, 1H), 7.67 (d, 2H), 7.77 (d, 2H), 7.80 -7.89 (m, 6H), 8.41 (d, 2H) ppm.



Step 2: 4-(4'-[2-[1-Ethyl-4-(4-methylcarbamoyl-phenyl)-1H-imidazol-2-yl]-(E)-vinyl]-biphenyl-4-yloxy)-butyric acid methyl ester (262 mg, 0.5 mmol) was hydrolyzed according to general procedure F to give 4-(4'-[2-[1-ethyl-4-(4-methylcarbamoyl-phenyl)-1H-imidazol-2-yl]-(E)-vinyl]-biphenyl-4-yloxy)-butyric acid (199 mg, 78%).

5 LCMS:  $m/z$  510 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (DMSO-*d*<sub>6</sub>, 400 MHz): 1.40 (t, 3H), 1.96 (m, 2H), 2.35 (m, 2H), 2.79 (s, 3H), 4.05 (q, 2H), 4.23 (t, 2H), 7.04 (d, 2H), 7.28 (s, 1H), 7.32 (s, 1H), 7.53 (s, 1H), 7.56 (s, 1H), 7.64 (d, 2H), 7.77 (d, 2H), 7.83-7.89 (m, 4H), 8.41 (d, 2H) ppm.

## 10 Example 206

### 4-{4'-[2-(4-Biphenyl-4-yl-1-ethyl-1H-imidazol-2-yl)-(E)-vinyl]-biphenyl-4-yloxy}-butyric acid

Step 1: 4-Biphenyl-4-yl-2-[2-(4-bromo-phenyl)-(E)-vinyl]-1-ethyl-1H-imidazole (429 mg, 1 mmol) was coupled with 4-hydroxyphenylboronic acid (137 mg, 1 mmol) following general procedure B and obtained 4'-[2-(4-biphenyl-4-yl-1-ethyl-1H-imidazol-2-yl)-(E)-vinyl]-biphenyl-4-ol (442 mg, 1 mmol) was alkylated with methyl 4-bromobutyrate (181 mg, 1 mmol) following general procedure E to give 4-{4'-[2-(4-biphenyl-4-yl-1-ethyl-1H-imidazol-2-yl)-(E)-vinyl]-biphenyl-4-yloxy}-butyric acid methyl ester (399 mg, 74%).

20 LCMS:  $m/z$  543 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz): 1.54 (t, 3H), 2.17 (m, 2H), 2.59 (m, 2H), 3.71 (s, 3H), 4.05 (q, 2H), 4.15 (t, 2H), 6.94 (s, 1H), 6.96-6.99 (m, 2H), 7.29 (s, 1H), 7.34-7.43 (m, 2H), 7.45-7.47 (m, 2H), 7.55-7.58 (m, 4H), 7.62-7.67 (m, 5H), 7.79 (s, 1H), 7.93 (d, 2H) ppm.

Step 2: 4-{4'-[2-(4-Biphenyl-4-yl-1-ethyl-1H-imidazol-2-yl)-(E)-vinyl]-biphenyl-4-yloxy}-butyric acid methyl ester (271 mg, 0.5 mmol) was hydrolyzed according to general procedure F to give 4-{4'-[2-(4-biphenyl-4-yl-1-ethyl-1H-imidazol-2-yl)-(E)-vinyl]-biphenyl-4-yloxy}-butyric acid (201 mg, 76%).

25 LCMS:  $m/z$  529 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (DMSO-*d*<sub>6</sub>, 400 MHz): 1.41 (t, 3H), 1.97 (m, 2H), 2.42 (t, 2H), 4.04 (q, 2H), 4.23 (t, 2H), 7.03 (d, 2H), 7.28 (s, 1H), 7.32-7.37 (m, 2H),

7.37-7.44 (m, 2H), 7.46-7.48 (m, 4H), 7.53 (s, 1H), 7.57 (s, 1H), 7.78-7.82 (m, 5H), 7.92 (d, 2H) ppm.

### Example 207

#### 5 4-Biphenyl-3-yl-2-[2-(4-bromo-phenyl)-(E)-vinyl]-1-ethyl-1H-imidazole

4-Biphenyl-3-yl-2-[2-(4-bromo-phenyl)-(E)-vinyl]-1-ethyl-1H-imidazole (314 mg, 73%) was prepared according to general procedure A using *trans*-4-bromocinnamic acid (227 mg, 1mmol) and  $\alpha$ -bromo-3-phenyl-acetophenone (275 mg, 1 mmol) and obtained 4-biphenyl-3-yl-2-[2-(4-bromo-phenyl)-(E)-vinyl]-1H-imidazole (401 mg, 1 mmol) was  
10 treated with bromoethane (109 mg, 1 mmol) following general procedure E.

LCMS:  $m/z$  430 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz):  $\delta$  1.54 (t, 3H), 4.17 (q, 2H), 6.90 (s, 1H), 7.34 (d, 2H), 7.43 (d, 2H), 7.44-7.51 (m, 4H), 7.61-7.65 (m, 4H), 7.91 (d, 2H), 8.01 (s, 1H) ppm.

#### 15 **Example 208**

#### 4-{4'-[2-(4-Biphenyl-3-yl-1-ethyl-1H-imidazol-2-yl)-(E)-vinyl]-biphenyl-4-yloxy}-butyric acid

Step 1: 4-Biphenyl-3-yl-2-[2-(4-bromo-phenyl)-(E)-vinyl]-1-ethyl-1H-imidazole (429 mg, 1 mmol) was coupled with 4-hydroxyphenylboronic acid (137 mg, 1 mmol)  
20 following general procedure B and obtained 4'-[2-(4-biphenyl-3-yl-1-ethyl-1H-imidazol-2-yl)-(E)-vinyl]-biphenyl-4-ol (442 mg, 1 mmol) was alkylated with 4-bromomethyl butyrate (181 mg, 1 mmol) following general procedure E to give 4-{4'-[2-(4-biphenyl-3-yl-1-ethyl-1H-imidazol-2-yl)-(E)-vinyl]-biphenyl-4-yloxy}-butyric acid methyl ester (418 mg, 77%).

LCMS:  $m/z$  543 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz):  $\delta$  1.51 (t, 3H), 2.14 (m, 2H),  
25 2.56 (m, 2H), 3.70 (s, 3H), 4.07 (q, 2H), 4.13 (t, 2H), 6.93 (s, 1H), 6.95-6.97 (m, 2H), 7.29 (s, 1H), 7.35-7.37 (m, 2H), 7.44-7.46 (m, 2H), 7.47-7.57 (m, 4H), 7.61-7.70 (m, 5H), 7.74-7.8 (m, 2H), 8.07 (s, 1H) ppm

**Step 2:** 4-{4'-[2-(4-Biphenyl-3-yl-1-ethyl-1H-imidazol-2-yl)-(E)-vinyl]-biphenyl-4-yloxy}-butyric acid methyl ester (271mg, 0.5 mmol) was hydrolyzed according to general procedure F to give 4-{4'-[2-(4-biphenyl-3-yl-1-ethyl-1H-imidazol-2-yl)-(E)-vinyl]-biphenyl-4-yloxy}-butyric acid (201 mg, 76%).

5 LCMS:  $m/z$  529 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (DMSO-*d*<sub>6</sub>, 400 MHz):  $\delta$  1.41 (t, 3H), 1.97 (m, 2H), 2.42 (t, 2H), 4.04 (q, 2H), 4.23 (t, 2H), 7.03 (d, 2H), 7.28 (s, 1H), 7.32-7.37 (m, 2H), 7.37-7.44 (m, 2H), 7.46-7.48 (m, 4H), 7.53 (s, 1H), 7.78-7.82 (m, 5H), 7.92 (d, 2H), 8.02 (s, 1H) ppm.

## 10 Example 209

4-(4'-[2-[4-(2-Chloro-phenyl)-1-ethyl-1H-imidazole-2-yl]-(E)-vinyl]-biphenyl-4-yloxy)-butyric acid methyl ester

*Trans*-4-bromocinnamic acid (227 mg, 1mmol) was reacted with 2-chloro phenacylbromide (233 mg, 1 mmol) according to general procedure A and obtained 2-[2-(4-bromo-phenyl)-(E)-vinyl]-4-(2-chloro-phenyl)-1H-imidazole (359 mg, 1 mmol) was treated with bromoethane (109 mg, 1 mmol) following general procedure. The resulted 2-[2-(4-bromo-phenyl)-(E)-vinyl]-4-(2-chloro-phenyl)-1-ethyl-1H-imidazole (387 mg, 1 mmol) was coupled with 4-hydroxyphenylboronic acid (137 mg, 1 mmol) following general procedure B and obtained 4'-[2-[4-(2-chloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl]-biphenyl-4-ol (401 mg, 1 mmol) was alkylated with methyl 4-bromobutyrate (181 mg, 1 mmol) following general procedure E to give 4-(4'-[2-[4-(2-chloro-phenyl)-1-ethyl-1H-imidazole-2-yl]-(E)-vinyl]-biphenyl-4-yloxy)-butyric acid methyl ester (399 mg, 79%).

LCMS:  $m/z$  501 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz):  $\delta$  1.51 (t, 3H), 2.16 (m, 2H), 2.58 (m, 2H), 3.70 (s, 3H), 4.06 (q, 2H), 4.14 (t, 2H), 6.92 (s, 1H), 6.96-6.98 (m, 2H), 7.17-7.19 (m, 2H), 7.33-7.40 (m, 2H), 7.42 (d, 2H), 7.54-7.59 (m, 2H), 7.60 -7.67 (m, 2H), 7.72 (s, 1H), 7.76 (s, 1H) ppm

## Example 210

4-(4'-{2-[4-(2-Chloro-phenyl)-1-ethyl-1H-imidazole-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-butyric acid

4-(4'-{2-[4-(2-Chloro-phenyl)-1-ethyl-1H-imidazole-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-butyric acid methyl ester (250 mg, 0.5 mmol) was hydrolyzed according to general  
 5 procedure F to give 4-(4'-{2-[4-(2-chloro-phenyl)-1-ethyl-1H-imidazole-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-butyric acid (196 mg, 80%).

LCMS:  $m/z$  487 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (DMSO-*d*<sub>6</sub>, 400 MHz):  $\delta$  1.39 (t, 3H), 1.98 (m, 2H), 2.42 (t, 2H), 4.05 (q, 2H), 4.30 (t, 2H), 7.04 (d, 2H), 7.23-7.29 (m, 2H), 7.33 (s, 1H), 7.38-7.40 (m, 2H), 7.42 (d, 1H), 7.47 (s, 1H), 7.49 (s, 1H), 7.54 -7.67 (m, 2H), 7.80 (d, 1H), 7.91 (s, 1H), 8.21 (d, 1H) ppm.

### Example 211

4-(4'-{2-[4-(2-Methoxy-phenyl)-1-ethyl-1H-imidazole-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-butyric acid methyl ester

*Trans*-4-bromocinnamic acid (227 mg, 1mmol) was reacted with 2-methoxy phenacylbromide (229 mg, 1 mmol) according to general procedure A and obtained 2-[2-(4-bromo-phenyl)-(E)-vinyl]-4-(2-methoxy-phenyl)-1H-imidazole (355 mg, 1 mmol) was treated with bromoethane (109 mg, 1 mmol) following general procedure E. The resulted 2-[2-(4-bromo-phenyl)-(E)-vinyl]-4-(2-methoxy-phenyl)-1-ethyl-1H-imidazole (383 mg, 1  
 20 mmol) was coupled with 4-hydroxyphenylboronic acid (137 mg, 1 mmol) following general procedure B and obtained 4'-{2-[4-(2-methoxy-phenyl)-1-ethyl-1H-imidazol-2yl]-(E)-vinyl}-biphenyl-4-ol (396 mg, 1 mmol) was alkylated with methyl 4-bromobutyrate (181 mg, 1 mmol) following general procedure E to give 4-(4'-{2-[4-(2-methoxy-phenyl)-1-ethyl-1H-imidazole-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-butyric acid methyl ester (375 mg,  
 25 75%).

LCMS:  $m/z$  497 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz):  $\delta$  1.52 (t, 3H), 2.16 (m, 2H), 2.58 (m, 2H), 3.70 (s, 3H), 3.96 (s, 3H), 4.07 (q, 2H), 4.13 (t, 2H), 6.93 (s, 1H), 6.95-6.96 (m, 2H), 6.97-7.07 (m, 2H), 7.23-7.25 (m, 2H), 7.53-7.55 (m, 2H), 7.57-7.60 (m 2H), 7.72 (s, 1H), 7.76 (s, 1H), 8.35 (d, 2H) ppm.

**Example 212**

4-(4'-{2-[4-(2-Methoxy-phenyl)-1-ethyl-1H-imidazole-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-butyric acid

- 5            4-(4'-{2-[4-(2-Methoxy-phenyl)-1-ethyl-1H-imidazole-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-butyric acid methyl ester (248 mg, 0.5 mmol) was hydrolyzed according to general procedure F to give 4-(4'-{2-[4-(2-methoxy-phenyl)-1-ethyl-1H-imidazole-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-butyric acid (189 mg, 78%).

LCMS:  $m/z$  483 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz):  $\delta$  1.52 (t, 3H), 2.16 (m, 2H),  
 10    2.58 (m, 2H), 3.95 (s, 3H), 4.03 (q, 2H), 4.13 (t, 2H), 6.84 (d, 2H), 6.91 (s, 1H), 6.95 (d, 1H), 6.97-7.09 (m, 2H), 7.23-7.25 (m, 2H), 7.44-7.46 (m, 2H), 7.52-7.57 (m 2H), 7.74(s, 1H), 7.78(s, 1H), 8.24 (d, 1H) ppm.

**Example 213**

- 15    4-(4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-3'-fluoro-biphenyl-4-yloxy)-butyric acid

Step 1: 2-[2-(4-Bromo-2-fluoro-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazole (321 mg, 73%) was prepared according to general procedure A using *trans*-4-bromo-2-fluorocinnamic acid (245 mg, 1mmol) and  $\alpha$ -bromo-2,4-dichloroacetophenone (267 mg, 1 mmol) and obtained 2-[2-(4-bromo-2-fluoro-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (412 mg, 1 mmol) which was then treated with bromoethane (109 mg, 1 mmol) following general procedure E.

LCMS:  $m/z$  440 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz):  $\delta$  1.52 (t, 3H), 4.08 (q, 2H), 4.14 (t, 2H), 7.07 (d, 1H), 7.25-7.28 (m, 2H), 7.29-7.39 (m, 2H), 7.42 (s, 1H), 8.24 (d, 1H)  
 25    ppm.

Step 2: 2-[2-(4-Bromo-2-fluoro-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazole (440 mg, 1 mmol) was coupled with 4-hydroxy phenyl boronic acid (137

mg, 1 mmol) following general procedure B and obtained 4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazole-2-yl]-(E)-vinyl}-3'-fluoro-biphenyl-4-ol (453 mg, 1mmol) was alkylated with 4-bromomethyl butyrate (181 mg, 1 mmol) following general procedure E to give 4-(4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-3'-fluoro-biphenyl-4-yloxy)-butyric acid methyl ester (453 mg, 81%).

LCMS:  $m/z$  553 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz):  $\delta$  1.52 (t, 3H), 2.17 (m, 2H), 2.58 (m, 2H), 3.71 (s, 3H), 4.07 (q, 2H), 4.15 (t, 2H), 6.96 (d, 2H), 7.08 (s, 1H), 7.12 (s, 1H), 7.28-7.37 (m, 2H), 7.43 (s, 1H), 7.53-7.61 (m, 4H), 7.69 (s, 1H), 8.29 (d, 1H) ppm.

Step 3: 4-(4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-3'-fluoro-biphenyl-4-yloxy)-butyric acid methyl ester (276 mg, 0.5 mmol) was hydrolyzed according to general procedure F to give 4-(4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-3'-fluoro-biphenyl-4-yloxy)-butyric acid (212 mg, 79%).

LCMS:  $m/z$  539 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (DMSO-*d*<sub>6</sub>, 400 MHz):  $\delta$  1.40 (t, 3H), 1.97 (m, 2H), 2.42 (t, 2H), 4.04 (q, 2H), 4.30 (t, 2H), 7.05 (d, 2H), 7.38 (s, 1H), 7.42 (s, 1H), 7.50 (d, 1H), 7.53 (s, 1H), 7.58 (d, 2H), 7.67-7.73 (m, 2H), 8.01- 8.05 (m, 2H), 8.21 (d, 1H) ppm.

### Example 214

4-(4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-3'-fluoro-biphenyl-3-yloxy)-butyric acid methyl ester

2-[2-(4-Bromo-2-fluoro-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazole (440 mg, 1 mmol) was coupled with 3-hydroxyphenylboronic acid (137 mg, 1 mmol) following general procedure B and obtained 4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazole-2-yl]-(E)-vinyl}-3'-fluoro-biphenyl-3-ol (453 mg, 1mmol) was alkylated with 4-bromomethyl butyrate (181 mg, 1 mmol) following general procedure E to give 4-(4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-3'-fluoro-biphenyl-3-yloxy)-butyric acid methyl ester (409 mg, 74%).

LCMS:  $m/z$  553 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz):  $\delta$  1.53 (t, 3H), 2.16 (m, 2H), 2.56 (m, 2H), 3.69 (s, 3H), 4.05 (q, 2H), 4.15 (t, 2H), 6.88 (d, 2H), 6.90-7.08 (m, 2H), 7.11 (d, 1H), 7.12 (s, 1H), 7.17-7.32 (m, 2H), 7.57-7.68 (m, 2H), 7.79 (s, 1H), 8.27 (d, 1H), 8.27 (d, 1H) ppm.

5

**Example 215**

4-(4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-3'-fluoro-biphenyl-3-yloxy)-butyric acid

10 4-(4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-3'-fluoro-biphenyl-3-yloxy)-butyric acid methyl ester (276 mg, 0.5 mmol) was hydrolyzed according to general procedure F to give 4-(4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-3'-fluoro-biphenyl-3-yloxy)-butyric acid (210 mg, 78%).

15 LCMS:  $m/z$  539 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (DMSO-*d*<sub>6</sub>, 400 MHz):  $\delta$  1.37 (t, 3H), 1.97 (m, 2H), 2.41 (t, 2H), 4.06 (q, 2H), 4.29 (t, 2H), 6.98 (d, 2H), 7.29-7.37 (m, 2H), 7.39-7.48 (m, 2H), 7.50-7.64 (m, 2H), 7.70 (s, 1H), 7.99 (s, 1H), 8.06-8.08 (m, 2H), 8.25 (d, 1H) ppm.

**Example 216**

20 4-(3'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-3-yloxy)-butyric acid methyl ester

Step 1: 2-[2-(3-Bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazole (312 mg, 74%) was prepared according to general procedure A using trans 3-bromo cinnamic acid (227 mg, 1 mmol) and 2-bromo-2,4-dichloro acetophenone (267 mg, 1 mmol) and obtained 2-[2-(3-Bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (394 mg, 1 mmol) was treated with bromo ethane (109 mg, 1 mmol) following general procedure E.

LCMS:  $m/z$  422 (M+H)<sup>+</sup>.

Step 2: 2-[2-(3-Bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazole (422 mg, 1 mmol) was coupled with 3-hydroxy phenyl boronic acid (137 mg, 1 mmol) following general procedure B and obtained 3'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-3-ol (435 mg, 1mmol) was alkylated with 4-bromomethyl butyrate (181 mg, 1 mmol) following general procedure E to give 4-(3'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-3-yloxy)-butyric acid methyl ester (429 mg, 80%).

LCMS:  $m/z$  535 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz):  $\delta$  1.53 (t, 3H), 2.15 (m, 2H), 2.58 (m, 2H), 3.69 (s, 3H), 4.07 (q, 2H), 4.15 (t, 2H), 6.88 (d, 2H), 6.95 (s, 1H), 6.98 (s, 1H), 7.14 (d, 1H), 7.21 (d, 1H), 7.30-7.33 (m, 2H), 7.35-7.46 (m, 2H), 7.50-7.53 (m, 2H), 7.74 (d, 1H), 8.26 (d, 1H) ppm.

### Example 217

4-(3'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-4-methoxy-biphenyl-4-yloxy)-butyric acid methyl ester

Step 1: 2-[2-(5-Bromo-2-methoxy-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazole (318 mg, 70%) was prepared according to general procedure A using *trans*-5-bromo-2-methoxycinnamic acid (257 mg, 1mmol) and 2-bromo-2,4-dichloroacetophenone (267 mg, 1 mmol) and obtained 2-[2-(5-bromo-2-methoxy-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (424 mg, 1 mmol) was treated with bromoethane (109 mg, 1 mmol) following general procedure E.

LCMS:  $m/z$  452 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz):  $\delta$  1.52 (t, 3H), 3.88 (s, 3H), 4.14 (q, 2H), 4.14 (t, 2H), 6.80 (d, 1H), 7.29-7.32 (m, 2H), 7.41 (s, 1H), 7.66 (d, 1H), 7.90 (d, 1H), 8.27 (d, 1H) ppm.

Step 2: 2-[2-(5-Bromo-2-methoxy-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazole (452 mg, 1 mmol) was coupled with 4-hydroxyphenylboronic acid (137 mg, 1 mmol) following general procedure B and obtained 3'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-4-methoxy-biphenyl-4-ol (465 mg, 1mmol) was alkylated with 4-bromomethyl butyrate (181 mg, 1 mmol) following general



procedure E to give 4-(3'-(2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-4-methoxy-biphenyl-4-yloxy)-butyric acid methyl ester (417 mg, 74%).

LCMS:  $m/z$  565 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz):  $\delta$  1.51 (t, 3H), 2.15 (m, 2H), 2.57 (m, 2H), 3.71 (s, 3H), 3.95 (s, 3H), 4.05 (q, 2H), 4.14 (t, 2H), 6.96-6.99 (m, 2H), 7.12 (d, 2H), 7.31 (d, 2H), 7.32-7.42 (m, 2H), 7.44-7.52 (m, 2H), 7.67 (s, 1H), 7.90 (d, 1H), 8.3 (d, 1H) ppm.

### Example 218

4-(3'-(2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-4-methoxy-biphenyl-4-yloxy)-butyric acid

4-(3'-(2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-4-methoxy-biphenyl-4-yloxy)-butyric acid methyl ester (283 mg, 0.5 mmol) was hydrolyzed according to general procedure F to give 4-(3'-(2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-4-methoxy-biphenyl-4-yloxy)-butyric acid title compound (219 mg, 79%).

LCMS:  $m/z$  551 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (DMSO-*d*<sub>6</sub>, 400 MHz):  $\delta$  1.35 (t, 3H), 1.97 (m, 2H), 2.41 (t, 2H), 3.91 (s, 3H), 4.03 (q, 2H), 4.27 (t, 2H), 7.01 (d, 2H), 7.11 (d, 2H), 7.33 (s, 1H), 7.37 (s, 1H), 7.48 (d, 1H), 7.50 (d, 1H), 7.64 (d, 1H), 7.85 (d, 1H), 7.94 (s, 1H), 8.02 (d, 1H), 8.24 (d, 1H) ppm.

### Example 219

4-(3'-(2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-4'-methoxy-biphenyl-3-yloxy)-butyric acid methyl ester

2-[2-(5-Bromo-2-methoxy-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazole (452 mg, 1 mmol) was coupled with 3-hydroxyphenylboronic acid (137 mg, 1 mmol) following general procedure B and obtained 3'-(2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-4-methoxy-biphenyl-3-ol (465 mg, 1mmol) was alkylated

with 4-bromomethyl butyrate (181 mg, 1 mmol) following general procedure E to give 4-(3'-(2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-4'-methoxy-biphenyl-3-yloxy)-butyric acid methyl ester (413 mg, 73%).

LCMS: 565 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz): δ 1.51 (t, 3H), 2.15 (m, 2H), 2.59 (m, 2H), 3.69 (s, 3H), 3.96 (s, 3H), 4.08 (q, 2H), 4.15 (t, 2H), 6.86 (d, 2H), 7.00 (d, 1H), 7.09 (s, 1H), 7.11-7.17 (m, 2H), 7.19 (d, 1H), 7.31-7.42 (m, 2H), 7.48 (d, 1H), 7.76 (s, 1H), 8.00 (d, 1H), 8.31 (d, 1H) ppm.

### Example 220

10 4-(3'-(2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-4'-methoxy-biphenyl-3-yloxy)-butyric acid

4-(3'-(2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-4'-methoxy-biphenyl-3-yloxy)-butyric acid methyl ester (283 mg, 0.5 mmol) was hydrolyzed according to general procedure F to give 4-(3'-(2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-4'-methoxy-biphenyl-3-yloxy)-butyric acid (212 mg, 77%).

LCMS: *m/z* 551 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (DMSO-*d*<sub>6</sub>, 400 MHz): δ 1.36 (t, 3H), 1.98 (m, 2H), 2.41 (t, 2H), 3.92 (s, 3H), 4.06 (q, 2H), 4.27 (t, 2H), 6.92 (d, 2H), 7.12 (d, 2H), 7.23 (s, 1H), 7.27 (s, 1H), 7.29 (d, 1H), 7.47 (d, 1H), 7.49-7.63 (m, 2H), 7.84 (s, 1H), 8.06 (d, 1H), 8.24 (d, 1H) ppm.

20

### Example 221

4-(3'-(2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-4'-fluoro-biphenyl-4-yloxy)-butyric acid methyl ester

25 2-[2-(5-Bromo-2-fluoro-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazole (369 mg, 84%) was prepared according to general procedure A using *trans*-5-bromo-2-fluorocinnamic acid (245 mg, 1mmol) and 2-bromo-2,4-dichloroacetophenone (267 mg, 1 mmol) and obtained 2-[2-(5-bromo-2-fluoro-phenyl)-(E)-vinyl]-4-(2,4-dichloro-

phenyl)-1H-imidazole (412 mg, 1 mmol) was treated with bromo ethane (109 mg, 1 mmol) following general procedure E.

LCMS:  $m/z$  440 (M+H)<sup>+</sup>.

2-[2-(5-Bromo-2-fluoro-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazole (440 mg, 1 mmol) was coupled with 4-hydroxyphenylboronic acid (137 mg, 1 mmol) following general procedure B and obtained 3'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazole-2-yl]-(E)-vinyl}-4'-fluoro-biphenyl-4-ol (453 mg, 1mmol) was alkylated with 4-bromomethyl butyrate (181 mg, 1 mmol) following general procedure E to give 4-(3'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-4'-fluoro-biphenyl-4-yloxy)-butyric acid methyl ester (415 mg, 75%).

LCMS:  $m/z$  553 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz):  $\delta$  1.52 (t, 3H), 2.17 (m, 2H), 2.58 (m, 2H), 3.71 (s, 3H), 4.07 (q, 2H), 4.15 (t, 2H), 6.96 (d, 2H), 7.08-7.12 (m, 2H), 7.16 (s, 1H), 7.18 (d, 1H), 7.21 (d, 2H), 7.36 (d, 2H), 7.53 (d, 1H), 7.89 (s, 1H), 8.29 (d, 1H) ppm.

### Example 222

4-(3'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-4'-fluoro-biphenyl-4-yloxy)-butyric acid

4-(3'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-4'-fluoro-biphenyl-4-yloxy)-butyric acid methyl ester (276 mg, 0.5 mmol) was hydrolyzed according to general procedure F to give 4-(3'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-4'-fluoro-biphenyl-4-yloxy)-butyric acid (214 mg, 80%).

LCMS:  $m/z$  539 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (DMSO-*d*<sub>6</sub>, 400 MHz):  $\delta$  1.37 (t, 3H), 1.98 (m, 2H), 2.42 (t, 2H), 4.04 (q, 2H), 4.28 (t, 2H), 7.05 (d, 2H), 7.31-7.46 (m, 2H), 7.47 (d, 2H), 7.50 (s, 1H), 7.64-7.69 (m 2H), 7.73 (d, 1H), 7.98 (s, 1H), 8.18 (d, 1H), 8.25 (d, 1H) ppm.

### Example 223

4-(4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-3'-fluoro biphenyl-4-yloxymethyl)-benzoic acid methyl ester

2-[2-(4-Bromo-2-fluoro-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazole (440 mg, 1 mmol) was coupled with 4-hydroxy phenyl boronic acid (137 mg, 1 mmol) following general procedure B and obtained 4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-3'-fluoro-biphenyl-4-ol (453 mg, 1mmol) was alkylated with methyl 4-(bromomethyl) benzoate (229 mg, 1 mmol) following general procedure E to give 4-(4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-3'-fluoro biphenyl-4-yloxymethyl)-benzoic acid methyl ester (423 mg, 70%).

LCMS: 601 (M+H)<sup>+</sup>. <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz): δ 1.53 (t, 3H), 3.92 (s, 3H), 4.15 (q, 2H), 5.18 (d, 2H), 7.03-7.07 (m, 2H), 7.11 (s, 1H), 7.27 (d, 2H), 7.30-7.36 (m, 2H), 7.42 (d, 2H), 7.51-7.60 (m, 4H), 7.68 (s, 1H), 7.78 (d, 1H), 8.08 (d, 1H), 8.28 (d, 1H) ppm.

**Example 224**

4-(4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-3'-fluoro-biphenyl-4-yloxymethyl)-benzoic acid

4-(4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-3'-fluoro-biphenyl-4-yloxymethyl)-benzoic acid methyl ester (301 mg, 0.5 mmol) was hydrolyzed according to general procedure F to give 4-(4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-3'-fluoro biphenyl-4-yloxymethyl)-benzoic acid (227 mg, 78%).

LCMS: *m/z* 587 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (DMSO-*d*<sub>6</sub>, 400 MHz): δ 1.39 (t, 3H), 4.29 (q, 2H), 5.28 (d, 2H), 7.11 (d, 2H), 7.37 (s, 1H), 7.49 (d, 2H), 7.51-7.58 (m, 2H), 7.60 (d, 1H), 7.65-7.74 (m, 4H), 7.96-8.0 (m 4H), 8.22 (d, 1H) ppm.

**Example 225**

4-(4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-3'-fluorobiphenyl-3-yloxymethyl)-benzoic acid methyl ester

2-[2-(4-Bromo-2-fluoro-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazole (440 mg, 1 mmol) was coupled with 3-hydroxy phenyl boronic acid (137 mg, 1 mmol) following general procedure B and obtained 4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-3'-fluoro-biphenyl-3-ol (453 mg, 1mmol) was alkylated with methyl 4-(bromomethyl) benzoate (229 mg, 1 mmol) following general procedure E to give 4-(4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-3'-fluoro biphenyl-3-yloxymethyl)-benzoic acid methyl ester (449 mg, 75%).

LCMS:  $m/z$  601 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz):  $\delta$  1.53 (t, 3H), 3.92 (s, 3H), 4.14 (q, 2H), 5.19 (d, 2H), 7.03-7.07 (m, 2H), 7.11 (s, 1H), 7.20 (d, 2H), 7.30-7.49 (m, 4H), 7.52-7.63 (m, 4H), 7.68 (s, 1H), 7.80 (d, 1H), 8.08 (d, 1H), 8.27 (d, 1H) ppm.

### Example 226

4-(4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-3'-fluorobiphenyl-3-yloxymethyl)-benzoic acid

4-(4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-3'-fluoro-biphenyl-3-yloxymethyl)-benzoic acid methyl ester (301 mg, 0.5 mmol) was hydrolyzed according to general procedure F to give 4-(4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-3'-fluoro biphenyl-3-yloxymethyl)-benzoic acid (226 mg, 77%).

LCMS:  $m/z$  587 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (DMSO-*d*<sub>6</sub>, 400 MHz):  $\delta$  1.37 (t, 3H), 4.28 (q, 2H), 5.29 (d, 2H), 7.05 (d, 2H), 7.35 (d, 2H), 7.37 -7.46 (m 4H), 7.48 (d, 1H), 7.58-7.68 (m, 4H), 7.95 (d, 2H), 8.21 (d, 1H), 8.23 (d, 1H) ppm.

### Example 227

4-(3'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-4'-fluorobiphenyl-4-yloxymethyl)-benzoic acid methyl ester

2-[2-(5-Bromo-2-fluoro-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazole (440 mg, 1 mmol) was coupled with 4-hydroxyphenylboronic acid (137 mg, 1 mmol) following general procedure B and obtained 3'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-4'-fluoro-biphenyl-4-ol (453 mg, 1mmol) was alkylated with  
 5 methyl 4-(bromomethyl)benzoate (229 mg, 1 mmol) following general procedure E to give  
 4-(3'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-4'-fluoro biphenyl-4-yloxymethyl)-benzoic acid methyl ester (429 mg, 72%).

LCMS:  $m/z$  601 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz):  $\delta$  1.51 (t, 3H), 3.91 (s, 3H), 4.13 (q, 2H), 5.18 (d, 2H), 7.06 (d, 2H), 7.10-7.16 (m, 2H), 7.31 (d, 1H), 7.42 (d, 2H),  
 10 7.44-7.54 (m, 4H), 7.68 (s, 1H), 8.02-8.08 (m, 4H), 8.28 (d, 1H) ppm.

### Example 228

4-(3'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-4'-fluorobiphenyl-4-yloxymethyl)-benzoic acid

15 4-(3'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-4'-fluorobiphenyl-4-yloxymethyl)-benzoic acid methyl ester (301 mg, 0.5 mmol) was hydrolyzed according to general procedure F to give 4-(3'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-4'-fluorobiphenyl-4-yloxymethyl)-benzoic acid (226 mg, 77%).

20 LCMS:  $m/z$  587 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (DMSO-*d*<sub>6</sub>, 400 MHz):  $\delta$  1.37 (t, 3H), 4.29 (q, 2H), 5.28 (d, 2H), 7.15 (d, 2H), 7.31-7.41 (m, 2H), 7.31-7.46 (m, 4H), 7.58 (d, 1H), 7.63-7.72 (m, 4H), 7.90 (d, 1H), 7.98 (d, 1H), 8.18 (d, 1H), 8.24 (d, 1H) ppm.

### Example 229

25 4-(3'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-4'-methoxy-biphenyl-4-yloxymethyl)-benzoic acid methyl ester

2-[2-(5-Bromo-2-methoxy-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazole (452 mg, 1 mmol) was coupled with 4-hydroxyphenylboronic acid (137 mg, 1 mmol) following general procedure B and obtained 3'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-4'-methoxy-biphenyl-4-ol (465 mg, 1mmol) was alkylated  
 5 with methyl 4-(bromomethyl) enzoate (229 mg, 1 mmol) following general procedure E to give 4-(3'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-4'-methoxy-biphenyl-4-yloxymethyl)-benzoic acid methyl ester (467 mg, 76%).

LCMS:  $m/z$  613 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz):  $\delta$  1.51 (t, 3H), 3.85 (s, 3H), 3.89 (s, 3H), 4.10 (q, 2H), 5.18 (d, 2H), 6.89 (d, 2H), 6.92-6.96 (m, 2H), 6.98-7.05 (m,  
 10 2H), 7.34 (d, 1H), 7.35-7.45 (m, 4H), 7.48 (d, 1H), 7.89 -8.01 (m, 4H), 8.23 (d, 1H) ppm.

### Example 230

4-(3'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-4'-methoxy-biphenyl-4-yloxymethyl)-benzoic acid

15 4-(3'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-4'-methoxy-biphenyl-4-yloxymethyl)-benzoic acid methyl ester (301 mg, 0.5 mmol) was hydrolyzed according to general procedure F to give 4-(3'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-4'-methoxy- biphenyl-4-yloxymethyl)-benzoic acid (229 mg, 78%).

20 LCMS:  $m/z$  599 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (DMSO-*d*<sub>6</sub>, 400 MHz):  $\delta$  1.37 (t, 3H), 3.92 (s, 3H), 4.26 (q, 2H), 5.26 (d, 2H), 7.10 (d, 2H), 7.21-7.31 (m, 2H), 7.32-7.36 (m, 2H), 7.38 (d, 1H), 7.42-7.57 (m, 4H), 7.69 (d, 1H), 7.78-8.26 (m, 4H), 8.18 (d, 1H) ppm.

### Example 231

25 4-(3'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-4'-methoxy-biphenyl-3-yloxymethyl)-benzoic acid methyl ester

2-[2-(5-Bromo-2-methoxy-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazole (452 mg, 1 mmol) was coupled with 3-hydroxyphenylboronic acid (137 mg, 1 mmol) following general procedure B and obtained 3'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-4'-methoxy-biphenyl-3-ol (465 mg, 1mmol) was alkylated  
5 with methyl 4-(bromomethyl)benzoate (229 mg, 1 mmol) following general procedure E to give 4-(3'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-4'-methoxy-biphenyl-3-yloxymethyl)-benzoic acid methyl ester (479 mg, 78%).

LCMS:  $m/z$  613 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz):  $\delta$  1.52 (t, 3H), 3.90 (s, 3H), 3.95 (s, 3H), 4.13 (q, 2H), 5.20 (d, 2H), 6.92 (d, 2H), 6.94 (d, 1H), 6.97 (d, 1H), 7.01-7.11  
10 (m, 2H), 7.20-7.21 (m, 2H), 7.30-7.38 (m, 2H), 7.41 (d, 1H), 7.46 (d, 1H), 7.47-7.49 (m, 2H), 7.74 (d, 1H), 8.06 (d, 1H), 8.29 (d, 1H) ppm.

### Example 232

4-(3'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-4'-methoxy-  
15 biphenyl-3-yloxymethyl)-benzoic acid

4-(3'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-4'-methoxy-biphenyl-3-yloxymethyl)-benzoic acid methyl ester (301 mg, 0.5 mmol) was hydrolyzed according to general procedure F to give 4-(3'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-4'-methoxy- biphenyl-3-yloxymethyl)-benzoic acid (227 mg,  
20 77%).

LCMS:  $m/z$  599 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (DMSO-*d*<sub>6</sub>, 400 MHz):  $\delta$  1.39 (t, 3H), 3.90 (s, 3H), 4.24 (q, 2H), 5.28 (d, 2H), 7.09 (d, 2H), 7.11-7.21 (m, 2H), 7.28-7.36 (m, 2H), 7.38 (d, 1H), 7.41-7.56 (m, 4H), 7.71 (d, 1H), 7.76-8.02 (m, 4H), 8.16 (d, 1H) ppm.

### 25 Example 233

4-(3'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxymethyl)-benzoic acid methyl ester



2-[2-(3-Bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazole (422 mg, 1 mmol) was coupled with 4-hydroxyphenylboronic acid (137 mg, 1 mmol) following general procedure B and obtained 3'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-ol (435 mg, 1mmol) was alkylated with methyl 4-(bromomethyl) benzoate (229 mg, 1 mmol) following general procedure E to give 4-(3'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxymethyl)-benzoic acid methyl ester (419 mg, 72%).

LCMS:  $m/z$  583 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz):  $\delta$  1.53 (t, 3H), 3.92 (s, 3H), 4.14 (q, 2H), 5.19 (d, 2H), 6.97 (d, 2H), 7.07 (d, 1H), 7.30 (d, 1H), 7.41-7.54 (m, 8H), 7.56-7.67 (m, 4H), 8.08 (d, 1H), 8.26 (d, 1H) ppm.

#### Example 234

##### 4-(3'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxymethyl)-benzoic acid

4-(3'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxymethyl)-benzoic acid methyl ester (292 mg, 0.5 mmol) was hydrolyzed according to general procedure F to give 4-(3'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxymethyl)-benzoic acid (219 mg, 77%).

LCMS:  $m/z$  569 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (DMSO-*d*<sub>6</sub>, 400 MHz):  $\delta$  1.39 (t, 3H), 4.29 (q, 2H), 5.28 (d, 2H), 7.12 (d, 2H), 7.41-7.57 (m, 4H), 7.59-7.72 (m, 8H), 7.89 (d, 1H), 7.91 (d, 1H), 7.99 (d, 1H), 8.2 (d, 1H) ppm.

#### Example 235

##### 4-(3'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-3-yloxymethyl)-benzoic acid methyl ester

2-[2-(3-Bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazole (422 mg, 1 mmol) was coupled with 3-hydroxyphenylboronic acid (137 mg, 1 mmol)

following general procedure B and obtained 3'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-3-ol (435 mg, 1mmol) was alkylated with methyl 4-(bromomethyl) benzoate (229 mg, 1 mmol) following general procedure E to give 4-(3'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-3-yloxymethyl)-benzoic acid methyl ester (449 mg, 77%).

LCMS:  $m/z$  583 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz):  $\delta$  1.50 (t, 3H), 3.92 (s, 3H), 4.13 (q, 2H), 5.21 (d, 2H), 6.97 (d, 2H), 6.99 (d, 1H), 7.23 (d, 1H), 7.31-7.51 (m, 8H), 7.54-7.67 (m, 4H), 8.04 (d, 1H), 8.27 (d, 1H) ppm.

## 10 Example 236

4-(3'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-3-yloxymethyl)-benzoic acid

4-(3'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-3-yloxymethyl)-benzoic acid methyl ester (292 mg, 0.5 mmol) was hydrolyzed according to general procedure F to give 4-(3'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-3-yloxymethyl)-benzoic acid (225 mg, 79%).

LCMS:  $m/z$  569 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (DMSO-*d*<sub>6</sub>, 400 MHz):  $\delta$  1.37 (t, 3H), 4.29 (q, 2H), 5.31 (d, 2H), 7.06 (d, 2H), 7.34-7.42 (m, 4H), 7.44-7.60 (m, 6H), 7.62-7.74 (m, 2H), 7.76 (d, 1H), 7.96-7.99 (m 2H), 8.23 (d, 1H) ppm.

20

## Example 237

4-(4-(2,4-Dichloro-phenyl)-2-{2-[4'-(3-methoxycarbonyl-propoxy)-biphenyl-3yl]-(E)-vinyl}-imidazol-1yl)-butyric acid methyl ester

4-(4-(2,4-Dichloro-phenyl)-2-{2-[4'-(3-methoxycarbonyl-propoxy)-biphenyl-3yl]-(E)-vinyl}-imidazol-1yl)-butyric acid methyl ester (421 mg, 69%) was prepared according to general procedure A using *trans*-3-bromocinnamic acid (227 mg, 1mmol) and 2-bromo-2,4-dichloroacetophenone (267 mg, 1 mmol) and obtained 2-[2-(3-bromo-

TTP 2002-08

phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (394 mg, 1 mmol) was coupled with 4-hydroxyphenylboronic acid (137 mg, 1 mmol) following general procedure B and resulting 3'-{2-[4-(2,4-dichloro-phenyl)-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-ol (407 mg, 1mmol) was di-alkylated with methyl 4-bromobutyrate (362 mg, 2 mmol) following  
 5 general procedure E.

LCMS:  $m/z$  607 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz):  $\delta$  2.18 (m, 2H), 2.42 (t, 3H), 2.56 (t, 3H), 3.66 (s, 3H), 3.70 (s, 3H), 4.06 (q, 2H), 4.20 (q, 2H), 6.96 (d, 2H), 7.07 (d, 2H), 7.31 (d, 1H), 7.33-7.42 (m, 2H), 7.44-7.52 (m, 2H), 7.56 (d, 2H), 7.64 (s, 1H), 7.77 (d, 1H), 8.27 (d, 1H) ppm.

10

### Example 238

4-[2-{2-[4'-(3-Carboxy-propoxy)-biphenyl-3-yl]-(E)-vinyl]-4-(2,4-dichloro-phenyl)-imidazol-1-yl]-butyric acid

4-(4-(2,4-Dichloro-phenyl)-2-{2-[4'-(3-methoxycarbonyl-propoxy)-biphenyl-3yl]-(E)-vinyl}-imidazol-1yl)-butyric acid methyl ester (304 mg, 0.5 mmol) was hydrolyzed  
 15 according to general procedure F to give 4-[2-{2-[4'-(3-carboxy-propoxy)-biphenyl-3-yl]-(E)-vinyl]-4-(2,4-dichloro-phenyl)-imidazol-1-yl]-butyric acid (212 mg, 73%).

LCMS:  $m/z$  579 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (DMSO-*d*<sub>6</sub>, 400 MHz):  $\delta$  1.96 (m, 2H), 2.28 (t, 3H), 2.42 (t, 3H), 4.03 (q, 2H), 4.25 (q, 2H), 7.03 (d, 2H), 7.40-7.55 (m 4H), 7.61-7.65  
 20 (m, 4H), 7.67-7.69 (m, 2H), 7.94 (d, 1H), 8.26 (d, 1H) ppm.

### Example 239

4-(3'-{2-[4-(2,4-Dichloro-phenyl)-1-methoxycarbonylmethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4yloxy)-butyric acid methyl ester

4-(3'-{2-[4-(2,4-Dichloro-phenyl)-1-methoxycarbonylmethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4yloxy)-butyric acid methyl ester (379 mg, 65%) was prepared according to general procedure A using trans 3-bromo cinnamic acid (227 mg, 1mmol) and 2-

bromo-2,4- dichloro acetophenone (267 mg, 1 mmol) and obtained 2-[2-(3-Bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (394 mg, 1 mmol) was alkylated with methyl bromo acetate (153 mg, 1 mmol) following general procedure E. The obtained 2-[2-(3-Bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazol-1-yl]-acetic acid methyl ester (466 mg, 1mmol) was coupled with 4-hydroxy phenyl boronic acid (137 mg, 1 mmol) following general procedure B and resulting 4{-(2,4-dichloro-phenyl)-2-[2-(4'-hydroxy-biphenyl-3-yl)-imidazol-1-yl]} acetic acid methyl ester (479 mg, 1mmol) was alkylated with 4-bromomethyl butyrate (181 mg, 1 mmol) following general procedure E.

LCMS:  $m/z$  579 (M+H)<sup>+</sup>.

10

#### Example 240

4-(3'-{2-[4-(2,4-Dichloro-phenyl)-1-methoxycarbonylmethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-butyric acid

4-(3'-{2-[4-(2,4-Dichloro-phenyl)-1-methoxycarbonylmethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-butyric acid methyl ester (290 mg, 0.5 mmol) was hydrolyzed according to general procedure F to give 4-(3'-{2-[4-(2,4-dichloro-phenyl)-1-methoxycarbonylmethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-butyric acid (382 mg, 69%).

LCMS:  $m/z$  551 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (DMSO-*d*<sub>6</sub>, 400 MHz):  $\delta$  1.98 (m, 2H), 2.42 (t, 2H), 4.03 (t, 2H), 5.17 (d, 2H), 7.03 (d, 1H), 7.30 (s, 1H), 7.34 (s, 1H), 7.38-7.49 (m, 2H), 7.50-7.54 (m, 2H), 7.55-7.71 (m, 4H), 7.94 (d, 1H), 7.97 (d, 1H), 8.30 (d, 1H) ppm.

20

#### Example 241

4-(6-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-naphthalen-2-yloxy)-butyric acid

25

*Trans*-3-(6-methoxynaphthalene-2-yl)acrylic acid (228 mg, 1mmol) was reacted with 2-bromo-2,4-dichloroacetophenone (267 mg, 1 mmol) according to general

procedure A and obtained 4-(2,4-dichloro-phenyl)-2[2-(6-methoxy-naphthalen-2-yl)-(E)-vinyl]-1H-imidazol (198 mg, 0.5 mmol) was treated with bromo ethane (55 mg, 1 mmol) following general procedure E . The resulted 4-(2,4-dichloro-phenyl)-1-ethyl-2[2-(6-methoxy-naphthalen-2-yl)-(E)-vinyl]-1H-imidazole (211 mg, 0.5 mmol) was de-alkylated  
 5 as described in general procedure C and obtained 6-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazole-2-yl]-(E)-vinyl}-naphthalen-2-ol (205 mg, 0.5mmol) was alkylated with methyl 4-bromobutyrate (91mg, 0.5 mmol) following general procedure E. The resulted 4-(6-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-naphthalen-2-yloxy)-butyric acid methyl ester (255 mg, 0.5 mmol) was hydrolyzed according to general  
 10 procedure F to give 4-(6-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-naphthalen-2-yloxy)-butyric acid (327 mg, 66%).

LCMS:  $m/z$  495 (M+H)<sup>+</sup>.

#### Example 242

15 2-[2-(6-Benzyloxy-naphthalen-2-yl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazole

2-[2-(6-Benzyloxy-naphthalen-2-yl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazole (141 mg, 57%) was prepared according to general procedure A using trans-3-(6-methoxy naphthalene-2-yl)acrylic acid (Rwerechem-BKHW-0217) (228 mg, 1mmol) and 2-bromo-2,4- dichloro acetophenone (267 mg, 1 mmol) and obtained 4-(2,4-dichloro-phenyl)-2[2-(6-methoxy-naphthalen-2-yl)-(E)-vinyl]-1H-imidazol (197 mg, 0.5  
 20 mmol) was treated with bromo ethane (99 mg, 0.5 mmol) following general procedure E . The resulted 4-(2,4-dichloro-phenyl)-1-ethyl-2-[2-(6-methoxy-naphthalen-2-yl)-(E)-vinyl]-1H-imidazole (212 mg, 0.5 mmol) was de-alkylated as described in general procedure C and obtained 6-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-naphthalen-2-ol (204 mg, 0.5 mmol) was alkylated with benzyl bromide (86 mg, 0.5mmol) following general procedure E.  
 25

LCMS:  $m/z$  499 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (DMSO-*d*<sub>6</sub>, 400 MHz): δ 1.40 (t, 3H), 4.29 (q, 2H), 5.23 (s, 2H), 7.33 (d, 1H), 7.37-7.45 (m, 5H), 7.51-7.53 (m, 2H), 7.63 (d, 1H), 7.65 (d, 1H), 7.83-7.96 (m, 4H), 7.97 (d, 1H), 8.06 (s, 1H), 8.27 (d, 1H) ppm.

**Example 243****2-[2-(6-Benzoyloxy-naphthalen-2-yl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-imidazol-1-yl]-acetic acid methyl ester**

5            2-[2-(6-Benzoyloxy-naphthalen-2-yl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-imidazol-1-yl]-acetic acid methyl ester (139 mg, 51% ) was prepared according to general procedure A using trans- 3-(6-methoxy naphthalene-2-yl)acrylic acid (Rwrechem-BKHW-0217) (228 mg, 1mmol) and 2-bromo-2,4- dichloro acetophenone (267 mg, 1 mmol) and obtained 4-(2,4-dichloro-phenyl)-2[2-(6-methoxy-naphthalen-2-yl)-(E)-vinyl]-1H-imidazol (197 mg, 0.5 mmol) was alkylated with methyl bromo acetate (77 mg, 0.5 mmol) following general procedure E. The resulted 4-(2,4-dichloro-phenyl)-2-[2-(6-methoxy-naphthalen-2-yl)-(E)-vinyl]-imidazol-1-yl}-acetic acid methyl ester (233 mg, 0.5 mmol) was de-alkylated as described in general procedure C and obtained 4-(2,4-dichloro-phenyl)-2-[2-(6-hydroxy-naphthalen-2-yl)-(E)-vinyl]-imidazol-1-yl}-acetic acid methyl ester (227 mg, 0.5 mmol) was alkylated with benzyl bromide (171 mg, 1 mmol) following general procedure E.

LCMS:  $m/z$  543 (M+H)<sup>+</sup>.

**Example 244**

20    **2-[2-(6-Benzoyloxy-naphthalen-2-yl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-imidazol-1-yl]-acetic acid**

25            2-[2-(6-Benzoyloxy-naphthalen-2-yl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-imidazol-1-yl]-acetic acid methyl ester (135 mg, 0.25 mmol) was hydrolyzed according to general procedure F to give 2-[2-(6-Benzoyloxy-naphthalen-2-yl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-imidazol-1-yl]-acetic acid methyl ester (75 mg, 57%).

LCMS:  $m/z$  529 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (DMSO-*d*<sub>6</sub>, 400 MHz): δ 5.17 (s, 2H), 5.23 (s, 2H), 7.15 (d, 1H), 7.19-7.28 (m, 2H), 7.32-7.37 (m, 2H), 7.40-7.48 (m, 2H), 7.51-7.55 (m,

2H), 7.68 (d, 1H), 7.80-7.95 (m, 3H), 7.98 (s, 1H), 8.04 (s, 1H), 8.20 (d, 1H), 8.31 (d, 1H) ppm

### Example 245

#### 5 2-[2-(6-Benzyloxy-naphthalen-2yl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole

*Trans*- 3-(6-methoxy naphthalene-2-yl)acrylic acid methyl ester (242 mg, 1mmol) was de-alkylated as described in general procedure C and obtained 3-(6-hydroxy-naphthalen-2-yl)-acrylic acid methyl ester (228 mg, 1 mmol) was alkylated with benzyl bromide (171 mg, 1 mmol) following general procedure E. The resulted 3-(6-benzyloxy-naphthalen-2yl)-acrylic acid methyl ester (159 mg, 0.5 mmol) was hydrolyzed according to general procedure F and obtained 3-(6-benzyloxy-naphthalen-2yl)-acrylic acid (152 mg, 0.5 mmol) was treated with 2-bromo-2,4-dichloroacetophenone (134 mg, 0.5 mmol) following general procedure A to give 2-[2-(6-benzyloxy-naphthalen-2yl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (119 mg, 50%).

15 LCMS:  $m/z$  471 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (DMSO-*d*<sub>6</sub>, 400 MHz):  $\delta$  5.23 (s, 2H), 7.15 (d, 1H), 7.16 (d, 1H), 7.19-7.27 (m, 2H), 7.35-7.37 (m, 2H), 7.40-7.49 (m, 2H), 7.50-7.56 (m, 2H), 7.64 (d, 1H), 7.80 (d, 2H), 7.83 (d, 1H), 8.22 (d, 1H), 11.99 (s, 1H), 12.6 (s, 1H) ppm.

#### 20 **Example 246**

#### 2-[2-(6-Butoxy-naphthalen-2yl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole

*Trans*-3-(6-methoxynaphthalene-2-yl)acrylic acid methyl ester (242 mg, 1mmol) was de-alkylated as described in general procedure C and obtained 3-(6-hydroxy-naphthalen-2-yl)-acrylic acid methyl ester (228 mg, 1 mmol) was alkylated with bromo butane (137 mg, 1 mmol) following general procedure E. The resulted 3-(6-butoxy-naphthalen-2yl)-acrylic acid methyl ester (142 mg, 0.5 mmol) was hydrolyzed according to general procedure F and obtained 3-(6-butoxy-naphthalen-2yl)-acrylic acid (135 mg, 0.5 mmol) was treated with 2-bromo-2,4-dichloroacetophenone (134 mg, 0.5 mmol)

following general procedure A to give 2-[2-(6-butoxy-naphthalen-2-yl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (109 mg, 50%).

LCMS:  $m/z$  437 (M+H)<sup>+</sup>.

## 5 Example 247

### 4-(3-{2-[4-(2,4-Dichloro-phenyl)-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-butyric acid

*Trans*-3-bromocinnamic acid (227 mg, 1mmol) was reacted with 2-bromo-2,4-dichloroacetophenone (267 mg, 1 mmol) according to general procedure A and  
 10 obtained 2-[2-(3-bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (394 mg, 1 mmol) was coupled with 4-hydroxy phenyl boronic acid (137 mg, 1 mmol) following general procedure B and resulted 3'-(2-[4-(2,4-dichloro-phenyl)-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-ol (407 mg, 1 mmol) was protected with di-*tert*-butyl-dicarbonate according to general procedure N. The obtained 4-(2,4-dichloro-phenyl)-2-[2-(4'-hydroxy-  
 15 biphenyl-3-yl)-(E)-vinyl]-imidazole-1-carboxylic acid *tert*-butyl ester (507 mg, 1mmol) was alkylated with 4-bromomethyl butyrate (181 mg, 1 mmol) following general procedure E and resulted 4-(2,4-dichloro-phenyl)-2-[2-(4'-(3-methoxy-carbonyl-propoxy)-biphenyl-3-yl)-(E)-vinyl]-imidazole-1-carboxylic acid *tert*-butyl ester ester (303 mg, 0.5 mmol) was  
 20 hydrolyzed & de-protected according to general procedure F & O to give 4-(3-{2-[4-(2,4-Dichloro-phenyl)-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-butyric acid ( 121 mg, 50%).

LCMS:  $m/z$  493 (M+H)<sup>+</sup>; H NMR (DMSO- $d_6$ , 400 MHz):  $\delta$  1.49 (m, 2H), 1.98 (m, 2H), 2.21 (t, 2H), 4.22 (t, 2H), 6.88 (d, 2H), 7.38-7.40 (m, 2H), 7.46-7.48 (m, 2H), 7.49-7.57 (m, 2H), 7.61 (d, 1H), 7.87 (d, 2H), 8.24 (d, 1H) ppm.

25

## Example 248

### 4-(3'-(2-[4-(2,4-Dichloro-phenyl)-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxymethyl)-benzoic acid



*Trans*--bromocinnamic acid (227 mg, 1mmol) was reacted with 2-bromo-2,4-dichloro acetophenone (267 mg, 1 mmol) according to general procedure A and obtained 2-[2-(3-bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (394 mg, 1 mmol) was coupled with 4-hydroxy phenyl boronic acid (137 mg, 1 mmol) following  
 5 general procedure B and resulted 3'-(2-[4-(2,4-dichloro-phenyl)-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-ol (407 mg, 1 mmol) was protected with di-*tert*-butyl-dicarbonate according to general procedure N. The obtained 4-(2,4-dichloro-phenyl)-2-[2-(4'-hydroxy-biphenyl-3-yl)-(E)-vinyl]-imidazole-1-carboxylic acid tert-butyl ester (507 mg, 1mmol) was alkylated with methyl 4-methoxybenzoate (229 mg, 1 mmol) following general procedure E  
 10 and resulted 4-(2,4-dichloro-phenyl)-2-[2-(4'-(4-methoxy-carbonyl-benzyloxy)-biphenyl-3-yl)-(E)-vinyl]-imidazole-1-carboxylic acid tert-butyl ester (327 mg, 0.5 mmol) was hydrolyzed & de-protected according to general procedure F & O to give 4-(3-{2-[4-(2,4-dichloro-phenyl)-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxymethyl)-benzoic acid (129 mg, 48%).

15 LCMS:  $m/z$  541 (M+H)<sup>+</sup>.

#### Example 249

4-(4-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-phenoxy)-benzoic acid

20 4-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-phenol (300 mg, 0.84 mmol) was treated with ethyl 4-iodobenzoate using general procedure J, followed by ester hydrolysis according to general procedure F to give 4-(4-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-phenoxy)-benzoic acid (5.7 mg, 1.4% yield).

25 LCMS:  $m/z$  479 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (DMSO-*d*<sub>6</sub>, 400 MHz):  $\delta$  1.34 (t, 3H), 4.24 (q, 2H), 7.06 (d, 2H), 7.13 (d, 2H), 7.25 (d, 1H), 7.47 (dd, 1H), 7.54 (d, 1H), 7.62 (d, 1H), 7.81 (d, 2H), 7.94 (m, 3H), 8.22 (d, 1H) ppm.

#### Example 250

30 7-(4'-(2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl)-biphenyl-4-yloxy)-heptanoic acid

4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-ol (100 mg, 0.23 mmol) was treated with ethyl 7-bromoheptanoate using general procedure E, followed by ester hydrolysis according to general procedure F to give 7-(4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-heptanoic acid (2 mg, 1.5% yield).

LCMS:  $m/z$  563 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (DMSO-*d*<sub>6</sub>, 400 MHz):  $\delta$  1.35 (t, 3H), 1.42-1.56 (m, 4H), 1.70 (m, 4H), 2.20 (t, 2H), 4.00 (t, 2H) 4.25 (q, 2H), 7.01 (d, 2H), 7.30 (d, 1H), 7.48 (dd, 1H), 7.55 (d, 1H), 7.62-7.67 (m, 5H), 7.77 (d, 2H), 7.94 (s, 1H), 8.24 (d, 1H) ppm.

### Example 251

4-(4'-{2-[4-(2,4-Dichloro-phenyl)-1-(3-methyl-butyl)-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-butyric acid

4-(2,4-Dichloro-phenyl)-2-[2-(4'-methoxy-biphenyl-4-yl)-(E)-vinyl]-1H-imidazole (350 mg, 0.83 mmol) was treated with 1-bromo-3-methyl-butane using general procedure E, followed by ether cleavage according to general procedure C. Treatment with methyl 4-bromobutyrate, followed by ester hydrolysis according to general procedures E and F respectively gave 4-(4'-{2-[4-(2,4-dichloro-phenyl)-1-(3-methyl-butyl)-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-butyric acid (2 mg, 0.4% yield).

LCMS:  $m/z$  563 (M+H)<sup>+</sup>.

### Example 252

5-(4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-pentanoic acid

4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-ol (100 mg, 0.23 mmol) was treated with methyl 5-bromopentanoate using general procedure E, followed by ester hydrolysis according to general procedure F to give 5-(4'-

{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-pentanoic acid (5 mg, 4% yield).

LCMS:  $m/z$  535 (M+H)<sup>+</sup>.

## 5 Example 253

6-(4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-hexanoic acid

4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-ol (100 mg, 0.23 mmol) was treated with ethyl 6-bromohexanoate using general procedure E, followed by ester hydrolysis according to general procedure F to give 6-(4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-hexanoic acid (2 mg, 1.6% yield).

LCMS:  $m/z$  549 (M+H)<sup>+</sup>.

## 15 Example 254

3-(4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-propionic acid

4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-ol (57 mg, 0.13 mmol) was treated with 3-bromopropionic acid using general procedure P to give 3-(4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-propionic acid (8.2 mg, 12% yield).

LCMS:  $m/z$  507 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  1.55 (t, 3H), 2.76 (t, 2H), 4.22 (q, 2H), 4.30 (t, 3H), 6.98-7.09 (m, 3H), 7.35 (m, 1H), 7.47 (d, 1H), 7.54-7.69 (m, 8H), 8.00 (d, 1H) ppm.

**Exempl 255****4-(4'-(2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-propenyl)-biphenyl-4-yloxy)-butyric acid**

5 4'-(2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-propenyl)-biphenyl-4-ol (100 mg, 0.22 mmol) was treated with methyl 4-bromobutyrate using general procedure E, followed by ester hydrolysis according to general procedure F to give 4-(4'-(2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-propenyl)-biphenyl-4-yloxy)-butyric acid (14 mg, 12% yield).

10 LCMS:  $m/z$  535 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  1.53 (t, 3H), 2.14 (m, 2H), 2.42 (s, 3H), 2.55 (t, 2H), 4.09 (t, 2H), 4.18 (q, 2H), 6.79 (br s, 1H), 7.01 (m, 2H), 7.33 (dd, 1H), 7.45 (d, 1H) 7.50 (d, 2H), 7.58 (d, 2H), 7.63 (d, 2H), 7.66 (s, 1H), 7.97 (d, 1H) ppm.

**Example 256**

15 **4-(4'-(2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(Z)-2-fluoro-vinyl)-biphenyl-4-yloxy)-butyric acid**

20 4'-(2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(Z)-2-fluoro-vinyl)-biphenyl-4-ol (20 mg, 0.044 mmol) was treated with methyl 4-bromobutyrate using general procedure E, followed by ester hydrolysis according to general procedure F to give 4-(4'-(2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(Z)-2-fluoro-vinyl)-biphenyl-4-yloxy)-butyric acid (6 mg, 25% yield).

LCMS:  $m/z$  539 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz):  $\delta$  1.53 (t, 3H), 2.16 (m, 2H), 2.62 (t, 2H), 4.06 (t, 2H), 4.26 (q, 2H), 6.81 (d, 1H), 6.95 (d, 2H), 7.32 (dd, 1H), 7.44 (d, 1H), 7.51-7.59 (m, 4H), 7.68 (m, 3H), 8.14 (d, 1H) ppm.

25

**Example 257**

4-(4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-2-fluoro-vinyl}-biphenyl-4-yloxy)-butyric acid

4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-2-fluoro-vinyl}-biphenyl-4-ol (43 mg, 0.095 mmol) was treated with methyl 4-bromobutyrate using  
 5 general procedure E, followed by ester hydrolysis according to general procedure F to give 4-(4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-2-fluoro-vinyl}-biphenyl-4-yloxy)-butyric acid (15 mg, 29% yield).

LCMS:  $m/z$  539 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz):  $\delta$  1.34 (t, 3H), 2.13 (m, 2H), 2.60 (t, 2H), 3.89 (q, 2H), 4.04 (t, 2H), 6.81 (d, 1H), 6.92 (d, 2H), 7.15 (d, 2H), 7.29 (dd,  
 10 1H), 7.40-7.49 (m, 5H), 7.75 (s, 1H), 8.14 (d, 1H) ppm.

**Example 258**

4-(4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-2-methyl-butyric acid

15 4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-ol (90 mg, 0.21 mmol) was treated with 4-bromo-2-methylbutyric acid methyl ester using general procedure E, followed by ester hydrolysis according to general procedure F to give 4-(4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-2-methyl-butyric acid (25 mg, 22% yield).

20 LCMS:  $m/z$  535 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  1.23 (d, 3H), 1.48 (t, 3H), 1.87 (m, 1H), 2.17 (m, 1H), 2.70 (m, 1H), 4.04 (t, 2H), 4.15 (q, 2H), 6.92-6.98 (m, 3H), 7.30 (dd, 1H), 7.41 (d, 1H), 7.50-7.63 (m, 8H), 7.98 (d, 1H) ppm.

**Example 259**

4-(4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-pentanoic acid

4'-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-ol (90 mg, 0.21 mmol) was treated with 4-bromopentanoic acid methyl ester using general procedure E, followed by ester hydrolysis according to general procedure F to give 4-(4'-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-pentanoic acid (22 mg, 20% yield).

LCMS:  $m/z$  535 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz):  $\delta$  1.35 d, (3H), 1.52 (t, 3H), 1.96-2.09 (m, 2H), 2.55 (t, 2H), 4.13 (q, 2H), 4.51 (m, 1H), 6.90-6.97 (m, 3H), 7.32 (dd, 1H), 7.43 (d, 1H), 7.48-7.60 (m, 6H), 7.64 (s, 1H), 7.73 (d, 1H), 8.20 (d, 1H) ppm.

#### 10 Example 260

4-({2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-3H-benzoimidazole-5-carbonyl}-amino)-butyric acid

4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazole-2-carbaldehyde (20 mg, 0.074 mmol) was treated with methyl 3,4-diaminobenzoate using general procedure Q followed by ester hydrolysis according to general procedure F. The resulting acid was coupled with methyl 4-aminobutyrate using general procedure G, then ester hydrolysis according to general procedure F gave 4-({2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-3H-benzoimidazole-5-carbonyl}-amino)-butyric acid (1.6 mg, 4.5% yield).

LCMS:  $m/z$  486 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  1.55 (t, 3H), 1.95 (m, 2H), 2.40 (t, 2H), 4.27 (m, 2H), 4.82 (q, 2H), 7.42 (dd, 1H), 7.54 (d, 1H), 7.60-7.65 (m, 2H), 7.72 (m, 1H), 8.04 (s, 1H), 8.27 (d, 1H) ppm.

#### Example 261

6-{6-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-naphthalen-2-yloxy}-hexanoic acid

6-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-naphthalen-2-ol (40 mg, 0.1 mmol) was treated with 6-bromohexanoic acid ethyl ester using general procedure E,

followed by ester hydrolysis according to general procedure F to give 6-{6-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-naphthalen-2-yloxy}-hexanoic acid (10 mg, 20% yield).

LCMS:  $m/z$  497 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz):  $\delta$  1.47 (m, 5H), 1.68 (m, 2H), 1.81 (m, 2H), 2.35 (t, 2H), 3.97 (t, 2H), 4.15 (q, 2H), 7.12 (d, 1H), 7.19 (dd, 1H), 7.31 (dd, 1H), 7.44 (d, 1H), 7.69 (dd, 1H), 7.76-7.84 (m, 3H), 8.04 (s, 1H), 8.21 (d, 1H) ppm.

### Example 262

10 6-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-3-ethyl-3H-benzoimidazol-5-yloxy}-hexanoic acid

4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazole-2-carbaldehyde (50 mg, 0.186 mmol) was treated with methyl 3,4-diaminobenzoate using general procedure Q followed by benzimidazole alkylation with iodoethane according to general procedure E.

15 The resulting compound was demethylated using general procedure C. The phenol was then treated with 6-bromohexanoic acid ethyl ester using general procedure E, followed by ester hydrolysis according to general procedure F to give 6-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-3-ethyl-3H-benzoimidazol-5-yloxy}-hexanoic acid (4 mg, 4.3% yield).

20 LCMS:  $m/z$  515 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  1.47-1.57 (m, 6H), 1.62 (m, 2H), 1.77 (m, 2H), 1.87 (m, 2H), 2.43 (t, 2H), 4.07 (t, 2H), 4.74 (m, 4H), 6.87-6.96 (m, 2H), 7.32 (dd, 1H), 7.46 (d, 1H), 7.68 (d, 1H), 7.86 (s, 1H), 8.21 (d, 1H) ppm.

### Example 263

25 6-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-3H-benzoimidazol-5-yloxy}-hexanoic acid

3,4-dinitrophenol and ethyl 6-bromohexanoate were reacted using general procedure E, followed by nitro reduction using general procedure R. The resulting diamine and 4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazole-2-carbaldehyde (25 mg, 0.093 mmol) reacted using general procedure Q, followed by ester hydrolysis according to  
5 general procedure F to give 6-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-3H-benzoimidazol-5-yloxy}-hexanoic acid (3 mg, 6.5% yield).

LCMS:  $m/z$  487 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  1.55-1.63 (m, 5H), 1.75 (m, 2H), 1.87 (m, 2H), 2.37 (t, 2H), 4.07 (t, 2H), 4.77 (m, 2H), 6.95 (br s, 1H), 7.06 (br s, 1H), 7.38 (dd, 1H), 7.50 (d, 1H), 7.66 (br s, 1H), 7.86 (s, 1H), 8.12 (d, 1H) ppm.

10

#### Example 264

(3-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-3H-benzoimidazol-5-ylethynyl}-phenoxy)-acetic acid

6-Bromo-2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-1-(2-trimethylsilyl-ethoxymethyl)-1H-benzoimidazole (28.3 mg, 0.05 mmol) was treated with (3-ethynyl-phenoxy)-acetic acid methyl ester using general procedure H, followed by silyl group deprotection (with concurrent ester hydrolysis) according to general procedure S to give  
15 (3-{2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-3H-benzoimidazol-5-ylethynyl}-phenoxy)-acetic acid (1 mg, 4% yield).

LCMS:  $m/z$  531 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  1.48 (t, 3H), 4.39 (s, 2H), 4.77 (q, 2H), 6.88 (m, 1H), 7.01-7.06 (m, 2H), 7.19 (t, 1H), 7.32-7.39 (m, 2H), 7.46 (d, 1H), 7.96 (s, 1H), 8.19 (d, 1H) ppm.

20

#### Example 265

4-(3-{2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-3H-benzoimidazol-5-ylethynyl}-phenoxy)-butyric acid

25



6-Bromo-2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-1-(2-trimethylsilyl-ethoxymethyl)-1H-benzoimidazole (28.3 mg, 0.05 mmol) was treated with (3-ethynyl-phenoxy)-butyric acid methyl ester using general procedure H, followed by silyl group deprotection (with concurrent ester hydrolysis) according to general procedure S to give  
5 4-(3-[2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-3H-benzoimidazol-5-ylethynyl]-phenoxy)-butyric acid (2 mg, 8% yield).

LCMS:  $m/z$  559 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz):  $\delta$  1.60 (t, 3H), 2.18 (m, 2H), 2.60 (t, 2H), 4.09 (t, 2H), 4.90 (q, 2H), 6.87 (d, 1H), 7.13 (d, 2H), 7.35 (d, 1H), 7.43-7.50 (m, 2H), 7.66 (s, 1H), 7.70-7.77 (m, 2H), 7.86 (d, 1H) 7.96 (s, 1H) ppm.

10

#### Example 266

{3-[2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-3-(2-trimethylsilyl-ethoxymethyl)-3H-benzoimidazol-5-ylethynyl]-phenoxy}-acetic acid

6-Bromo-2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-1-(2-trimethylsilyl-ethoxymethyl)-1H-benzoimidazole (36 mg, 0.06 mmol) was treated with (3-ethynyl-phenoxy)-acetic acid methyl ester using general procedure H, followed by ester hydrolysis according to general procedure F to give {3-[2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-3-(2-trimethylsilyl-ethoxymethyl)-3H-benzoimidazol-5-ylethynyl]-phenoxy}-acetic acid (2 mg, 5% yield).  
15

LCMS:  $m/z$  661 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz):  $\delta$  0.13 (s, 9H), 1.10 (m, 2H), 1.68 (t, 3H), 3.73 (m, 2H), 4.81-4.95 (m, 4H), 6.51 (d, 2H), 7.10 (m, 1H), 7.26 (s, 1H), 7.38 (d, 1H), 7.42-7.49 (m, 2H), 7.61 (d, 1H), 7.63-7.72 (m, 2H), 7.90 (d, 1H), 8.07 (s, 1H), 8.31 (d, 1H) ppm.  
20

#### 25 Example 267

3-[2-[4-(2,4-Dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-3-(2-trimethylsilyl-ethoxymethyl)-3H-benzoimidazol-5-ylethynyl]-benzoic acid

6-Bromo-2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-1-(2-trimethylsilyl-ethoxymethyl)-1H-benzoimidazole (59 mg, 0.1 mmol) was treated with trimethylsilylacetylene using general procedure H, followed by selective TMS group removal using general procedure T. The resulting acetylene was treated with ethyl 3-iodobenzoate using general procedure H, followed by ester hydrolysis according to general procedure F to give 3-[2-[4-(2,4-dichloro-phenyl)-1-ethyl-1H-imidazol-2-yl]-3-(2-trimethylsilyl-ethoxymethyl)-3H-benzoimidazol-5-ylethynyl]-benzoic acid (0.3 mg, 0.5% yield).

LCMS:  $m/z$  631 (M+H)<sup>+</sup>.

#### Example 268

4-[(2-{4-(2,4-Dichloro-phenyl)-2-[2-(4'-ethoxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-yl}-acetyl-amino)-methyl]-benzoic acid methyl ester

4-[(2-{4-(2,4-Dichloro-phenyl)-2-[2-(4'-ethoxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-yl}-acetyl-amino)-methyl]-benzoic acid methyl ester (179 mg, 55%) was prepared according to General Procedure A using trans 4-bromo cinnamic acid (227 mg, 1mmol) and 2-bromo-2,4- dichloro acetophenone (267 mg, 1 mmol) and obtained 2-[2-(4-Bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (394 mg, 1 mmol) was alkylated with methyl bromo acetate (153 mg, 1 mmol) following general procedure E. The obtained 2-[2-(4-Bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazol-1yl]-acetic acid methyl ester (466 mg, 1mmol) was coupled with 4-ethoxy phenyl boronic acid (165 mg, 1 mmol) following General Procedure B and resulting 4-{-(2,4-dichloro-phenyl)-2-[2-(4'-ethoxy-biphenyl-3-yl)-imidazol-1-yl]} acetic acid methyl ester (479 mg, 1mmol) was hydrolyzed according to General Procedure F and resulted {4-(2,4-Dichloro-phenyl)-2-[2-(4'-ethoxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-yl}-acetic acid (247 mg, 0.5 mmol) was coupled with 4-(aminomethyl)- benzoic acid- methyl ester (83 mg, 0.5 mmol) following general procedure G.

LCMS: 640 (M+H)<sup>+</sup>

**Example 269**

4-[(2-{4-(2,4-Dichloro-phenyl)-2-[2-(4'-ethoxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-yl}-acetyl-amino)-methyl]-benzoic acid

5 4-[(2-{4-(2,4-Dichloro-phenyl)-2-[2-(4'-ethoxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-yl}-acetyl-amino)-methyl]-benzoic acid methyl ester (160 mg, 0.25 mmol) was hydrolyzed according to General Procedure F to give 4-[(2-{4-(2,4-Dichloro-phenyl)-2-[2-(4'-ethoxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-yl}-acetyl-amino)-methyl]-benzoic acid (99 mg, 63%).

LCMS: 626 (M+H)<sup>+</sup>

10

**Example 270**

4-[4'-(2-{4-(2,4-Dichloro-phenyl)-1-[(4-fluoro-benzylcarbamoyl)-methyl]-1H-imidazol-2-yl}-(E)-vinyl)-biphenyl-4-yloxy]-butyric acid methyl ester

15 4-[4'-(2-{4-(2,4-Dichloro-phenyl)-1-[(4-fluoro-benzylcarbamoyl)-methyl]-1H-imidazol-2-yl}-(E)-vinyl)-biphenyl-4-yloxy]-butyric acid methyl ester (189 mg, 56%) was prepared according to General Procedure A using trans 4-bromo cinnamic acid (227 mg, 1mmol) and 2-bromo-2,4- dichloro acetophenone (267 mg, 1 mmol) and obtained 2-[2-(4-Bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (394 mg, 1 mmol) was alkylated with methyl bromo acetate (153 mg, 1 mmol) following general procedure  
20 E. The obtained 2-[2-(4-Bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazol-1-yl]-acetic acid methyl ester (466 mg, 1mmol) was coupled with 4-hydroxy phenyl boronic acid (138 mg, 1 mmol) following General Procedure B and resulting {4-(2,4-Dichloro-phenyl)-2-[2-(4'-hydroxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-yl}-acetic acid methyl ester (240 mg, 0.5 mmol) was hydrolyzed according to General Procedure F. The  
25 resulted {4-(2,4-Dichloro-phenyl)-2-[2-(4'-hydroxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-yl}-acetic acid (233 mg, 0.5 mmol) was coupled with 4-fluoro benzylamine (63 mg, 0.5 mmol) following general procedure G and obtained 2-{4-(2,4-Dichloro-phenyl)-2-[2-(4'-hydroxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-yl}-N-(4-fluoro-benzyl)-acetamide (286 mg,

0.5 mmol) was alkylated with 4-bromobutyric acid methyl ester (91 mg, 0.5 mmol) according to general procedure E.

LCMS: 672 (M+H)<sup>+</sup>

## 5 Example 271

4-[4'-(2-{4-(2,4-Dichloro-phenyl)-1-[(4-fluoro-benzylcarbamoyl)-methyl]-1H-imidazol-2-yl}-(E)-vinyl)-biphenyl-4-yloxy]-butyric acid

4-[4'-(2-{4-(2,4-Dichloro-phenyl)-1-[(4-fluoro-benzylcarbamoyl)-methyl]-1H-imidazol-2-yl}-(E)-vinyl)-biphenyl-4-yloxy]-butyric acid methyl ester (168 mg, 0.25 mmol) was hydrolyzed according to General Procedure F to give 4-[4'-(2-{4-(2,4-Dichloro-phenyl)-1-[(4-fluoro-benzylcarbamoyl)-methyl]-1H-imidazol-2-yl}-(E)-vinyl)-biphenyl-4-yloxy]-butyric acid (101 mg, 62%).

LCMS: 658 (M+H)<sup>+</sup>

## 15 Example 272

4-[4'-(2-{4-(2,4-Dichloro-phenyl)-1-[(4-methoxy-benzylcarbamoyl)-methyl]-1H-imidazol-2-yl}-(E)-vinyl)-biphenyl-4-yloxy]-butyric acid methyl ester

4-[4'-(2-{4-(2,4-Dichloro-phenyl)-1-[(4-methoxy-benzylcarbamoyl)-methyl]-1H-imidazol-2-yl}-(E)-vinyl)-biphenyl-4-yloxy]-butyric acid methyl ester (191 mg, 55%) was prepared according to General Procedure A using trans 4-bromo cinnamic acid (227 mg, 1mmol) and 2-bromo-2,4- dichloro acetophenone (267 mg, 1 mmol) and obtained 2-[2-(4-Bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (394 mg, 1 mmol) was alkylated with methyl bromoacetate (153 mg, 1 mmol) following general procedure E. Thus obtained 2-[2-(4-Bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazol-1-yl]-acetic acid methyl ester (466 mg, 1mmol) was coupled with 4-hydroxy phenyl boronic acid (138 mg, 1 mmol) following General Procedure B and resulting {4-(2,4-Dichloro-phenyl)-2-[2-(4'-hydroxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-yl}-acetic acid

methyl ester (240 mg, 0.5 mmol) was hydrolyzed according to General Procedure F. The resulted 4-(2,4-Dichloro-phenyl)-2-[2-(4'-hydroxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-yl}-acetic acid (233 mg, 0.5 mmol) was coupled with 4-methoxy benzylamine (69 mg, 0.5 mmol) following general procedure G and obtained 2-{4-(2,4-Dichloro-phenyl)-2-[2-(4'-hydroxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-yl}-N-(4-methoxy-benzyl)-acetamide (292 mg, 0.5 mmol) was alkylated with 4-bromobutyric acid methyl ester (91 mg, 0.5 mmol) according to general procedure E.

LCMS: 684 (M+H)<sup>+</sup>

#### 10 Example 273

4-[4'-(2-{4-(2,4-Dichloro-phenyl)-1-[(4-methoxy-benzylcarbamoyl)-methyl]-1H-imidazol-2-yl)-(E)-vinyl)-biphenyl-4-yloxy]-butyric acid

4-[4'-(2-{4-(2,4-Dichloro-phenyl)-1-[(4-methoxy-benzylcarbamoyl)-methyl]-1H-imidazol-2-yl)-(E)-vinyl)-biphenyl-4-yloxy]-butyric acid methyl ester (171 mg, 0.25 mmol) was hydrolyzed according to General Procedure F to give 4-[4'-(2-{4-(2,4-Dichloro-phenyl)-1-[(4-methoxy-benzylcarbamoyl)-methyl]-1H-imidazol-2-yl)-(E)-vinyl)-biphenyl-4-yloxy]-butyric acid (112 mg, 67%).

LCMS: 670 (M+H)<sup>+</sup>

#### 20 Example 274

4-[4'-(2-{4-(2,4-Dichloro-phenyl)-1-[(4-trifluoromethoxy-benzylcarbamoyl)-methyl]-1H-imidazol-2-yl)-(E)-vinyl)-biphenyl-4-yloxy]-butyric acid methyl ester

4-[4'-(2-{4-(2,4-Dichloro-phenyl)-1-[(4--trifluoromethoxy-benzylcarbamoyl)-methyl]-1H-imidazol-2-yl)-(E)-vinyl)-biphenyl-4-yloxy]-butyric acid methyl ester (201 mg, 54%) was prepared according to General Procedure A using trans 4-bromo cinnamic acid (227 mg, 1mmol) and 2-bromo-2,4- dichloro acetophenone (267 mg, 1 mmol) and obtained 2-[2-(4-Bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (394 mg,

1 mmol) was alkylated with methyl bromo acetate (153 mg, 1 mmol) following general procedure E. The obtained 2-[2-(4-Bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazol-1-yl]-acetic acid methyl ester (466 mg, 1mmol) was coupled with 4-hydroxy phenyl boronic acid (138 mg, 1 mmol) following General Procedure B and resulting {4-(2,4-Dichloro-phenyl)-2-[2-(4'-hydroxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-yl}-acetic acid methyl ester (240 mg, 0.5 mmol) was hydrolyzed according to General Procedure F. The resulted {4-(2,4-Dichloro-phenyl)-2-[2-(4'-hydroxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-yl}-acetic acid (233 mg, 0.5 mmol) was coupled with 4--trifluoromethoxy benzylamine (96 mg, 0.5 mmol) following general procedure G and obtained 2-{4-(2,4-Dichloro-phenyl)-2-[2-(4'-hydroxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-yl}-N-(4--trifluoromethoxy-benzyl)-acetamide (319 mg, 0.5 mmol) was alkylated with 4-bromobutyric acid methyl ester (91 mg, 0.5 mmol) according to general procedure E.

LCMS:  $m/z$  738 (M+H)<sup>+</sup>

#### 15 Example 275

4-[4'-(2-{4-(2,4-Dichloro-phenyl)-1-[(4--trifluoromethoxy-benzylcarbamoyl)-methyl]-1H-imidazol-2-yl}-(E)-vinyl)-biphenyl-4-yloxy]-butyric acid

4-[4'-(2-{4-(2,4-Dichloro-phenyl)-1-[(4--trifluoromethoxy-benzylcarbamoyl)-methyl]-1H-imidazol-2-yl}-(E)-vinyl)-biphenyl-4-yloxy]-butyric acid methyl ester (185 mg, 0.25 mmol) was hydrolyzed according to General Procedure F to give 4-[4'-(2-{4-(2,4-Dichloro-phenyl)-1-[(4--trifluoromethoxy-benzylcarbamoyl)-methyl]-1H-imidazol-2-yl}-(E)-vinyl)-biphenyl-4-yloxy]-butyric acid (121 mg, 67%).

LCMS: 724 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (DMSO, 400 MHz):  $\delta$  1.60 (m, 2H), 1.95 (m, 2H), 2.19 (m, 2H), 2.36 (m, 2H), 4.36 (m, 2H), 5.05 (s, 2H), 7.02 (d, 1H), 7.15-7.19 (m, 4H), 7.38 (d, 1H), 7.50 (d, 1H), 7.55-7.69 (m, 6H), 7.71 (d, 1H), 7.96 (s, 1H), 8.29 (d, 1H), 8.88 (s, 1H) ppm.

#### Example 276

4-{4-(2,4-Dichloro-phenyl)-2-[2-(6'-fluoro-2'-methoxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid

4-[2-[2-(4-Bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester (300 mg, 0.55 mmol) was treated with 6-fluoro-2-methoxyphenylboronic acid using general procedure B, followed by ester hydrolysis according to general procedure F to give 4-{4-(2,4-dichloro-phenyl)-2-[2-(6'-fluoro-2'-methoxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid (197 mg, 62% yield).

LCMS:  $m/z$  573 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (DMSO-*d*<sub>6</sub>, 400 MHz):  $\delta$  3.74 (s, 3H), 5.62 (s, 2H), 7.08-7.20 (m, 3H), 7.30-7.37 (m, 3H), 7.48-7.53 (m, 3H), 7.56 (d, 1H), 7.63 (d, 1H), 7.69 (d, 2H), 7.93 (d, 2H), 8.10 (s, 1H), 8.27 (d, 1H) ppm.

**Example 277**

4-[2-[2-(3'-Cyano-biphenyl-4-yl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid

4-[2-[2-(4-Bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester (300 mg, 0.55 mmol) was treated with 3-cyanophenyl boronic acid using general procedure B, followed by ester hydrolysis according to general procedure F to give 4-[2-[2-(3'-cyano-biphenyl-4-yl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid (53 mg, 17% yield).

LCMS:  $m/z$  550 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (DMSO-*d*<sub>6</sub>, 400 MHz):  $\delta$  5.64 (s, 2H), 7.33-7.41 (m, 3H), 7.50 (dd, 1H), 7.58 (d, 1H), 7.64 (d, 1H), 7.67 (d, 1H), 7.75-7.79 (m, 4H), 7.82 (d, 1H), 7.93 (d, 2H), 8.06 (d, 1H), 8.10 (s, 1H), 8.20 (s, 1H), 8.27 (d, 1H) ppm.

**Example 278**

4-[4-(2,4-Dichloro-phenyl)-2-(4'-trifluoromethyl-biphenyl-4-ylmethyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester

Step1: 4-Bromophenylacetic acid (2.15 g, 10 mmol) is treated according to general procedure A using 2,4-dichlorophenacyl bromide to give the intermediate 2-(4-bromo-benzyl)-4-(2,4-dichloro-phenyl)-1H-imidazole, which is then treated as described in general procedure E using methyl 4-(bromomethyl)benzoate to give 4-[2-(4-bromo-benzyl)-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester (1.96 g, 37% total yield).

LCMS:  $m/z$  531 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (DMSO-d<sub>6</sub>, 400 MHz):  $\delta$  3.79 (s, 3H), 4.11 (s, 2H), 5.36 (s, 2H), 7.46-7.50 (m, 4H), 7.61 (d, 2H), 7.65 (d, 2H), 7.69 (d, 2H), 7.74 (s, 1H), 7.81 (d, 1H) ppm.

Step 2: 4-[4-(2,4-Dichloro-phenyl)-2-(4'-trifluoromethyl-biphenyl-4-ylmethyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester (41 mg, 34% yield) is prepared according to general procedure B using 4-[2-(4-bromo-benzyl)-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester (106 mg, 0.2 mmol) and 4-(trifluoromethyl)benzeneboronic acid (46 mg, 0.24 mmol).

LCMS:  $m/z$  595 (M+H)<sup>+</sup>.

### Example 279

4-[4-(2,4-Dichloro-phenyl)-2-(4'-trifluoromethyl-biphenyl-4-ylmethyl)-imidazol-1-ylmethyl]-benzoic acid

4-[4-(2,4-Dichloro-phenyl)-2-(4'-trifluoromethyl-biphenyl-4-ylmethyl)-imidazol-1-ylmethyl]-benzoic acid (32 mg, 91% yield) is prepared according to general procedure F using 4-[4-(2,4-dichloro-phenyl)-2-(4'-trifluoromethyl-biphenyl-4-ylmethyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester (36 mg, 0.06 mmol).

LCMS:  $m/z$  581 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (DMSO-d<sub>6</sub>, 400 MHz):  $\delta$  4.10 (s, 2H), 5.34 (s, 2H), 7.13 (d, 2H), 7.23 (d, 2H), 7.40 (d, 2H), 7.44 (dd, 1H), 7.48 (d, 2H), 7.60 (d, 1H), 7.68 (d, 2H), 7.81 (d, 2H), 7.94 (s, 1H), 8.18 (d, 1H) ppm.



**Example 280**

4-[4-(2,4-Dichloro-phenyl)-2-(3'-trifluoromethyl-biphenyl-4-ylmethyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester

4-[4-(2,4-Dichloro-phenyl)-2-(3'-trifluoromethyl-biphenyl-4-ylmethyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester (37 mg, 31% yield) is prepared according to general procedure B using 4-[2-(4-bromo-benzyl)-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester (106 mg, 0.2 mmol) and 3-(trifluoromethyl)benzeneboronic acid (46 mg, 0.24 mmol).

LCMS:  $m/z$  595 (M+H)<sup>+</sup>.

**Example 281**

4-[4-(2,4-Dichloro-phenyl)-2-(3'-trifluoromethyl-biphenyl-4-ylmethyl)-imidazol-1-ylmethyl]-benzoic acid

4-[4-(2,4-Dichloro-phenyl)-2-(3'-trifluoromethyl-biphenyl-4-ylmethyl)-imidazol-1-ylmethyl]-benzoic acid (26 mg, 89% yield) is prepared according to general procedure F using 4-[4-(2,4-dichloro-phenyl)-2-(3'-trifluoromethyl-biphenyl-4-ylmethyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester (30 mg, 0.05 mmol).

LCMS:  $m/z$  581 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (DMSO-d<sub>6</sub>, 400 MHz):  $\delta$  4.12 (s, 2H), 5.35 (s, 2H), 7.14 (d, 2H), 7.26 (d, 2H), 7.44 (dd, 1H), 7.57 (d, 2H), 7.60 (d, 1H), 7.65-7.69 (m, 4H), 7.82 (d, 2H), 7.95 (s, 1H), 8.17 (d, 1H) ppm.

**Example 282**

4-[4-(2,4-Dichloro-phenyl)-2-(4'-trifluoromethoxy-biphenyl-4-ylmethyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester

4-[4-(2,4-Dichloro-phenyl)-2-(4'-trifluoromethoxy-biphenyl-4-ylmethyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester (93 mg, 78% yield) is prepared according to general

procedure B using 4-[2-(4-bromo-benzyl)-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester (106 mg, 0.2 mmol) and 4-(trifluoromethoxy)benzeneboronic acid (50 mg, 0.24 mmol).

LCMS:  $m/z$  611 (M+H)<sup>+</sup>.

5

### Example 283

4-[4-(2,4-Dichloro-phenyl)-2-(4'-trifluoromethoxy-biphenyl-4-ylmethyl)-imidazol-1-ylmethyl]-benzoic acid

10 4-[4-(2,4-Dichloro-phenyl)-2-(4'-trifluoromethoxy-biphenyl-4-ylmethyl)-imidazol-1-ylmethyl]-benzoic acid (54 mg, 90% yield) is prepared according to general procedure F using 4-[4-(2,4-dichloro-phenyl)-2-(4'-trifluoromethoxy-biphenyl-4-ylmethyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester (61 mg, 0.1 mmol).

15 LCMS:  $m/z$  597 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (DMSO-d<sub>6</sub>, 400 MHz):  $\delta$  4.11 (s, 2H), 5.34 (s, 2H), 7.13 (d, 2H), 7.23 (d, 2H), 7.39 (d, 2H), 7.43 (dd, 1H), 7.48 (d, 2H), 7.60 (d, 1H), 7.68 (d, 2H), 7.81 (d, 2H), 7.94 (s, 1H), 8.17 (d, 1H) ppm.

### Example 284

4-[4-(2,4-Dichloro-phenyl)-2-(3'-trifluoromethoxy-biphenyl-4-ylmethyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester

20 4-[4-(2,4-Dichloro-phenyl)-2-(3'-trifluoromethoxy-biphenyl-4-ylmethyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester (88 mg, 72% yield) is prepared according to general procedure B using 4-[2-(4-bromo-benzyl)-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester (106 mg, 0.2 mmol) and 3-(trifluoromethoxy)benzeneboronic acid (50 mg, 0.24 mmol).

25 LCMS:  $m/z$  611 (M+H)<sup>+</sup>.

**Example 285**4-[4-(2,4-Dichloro-phenyl)-2-(3'-trifluoromethoxy-biphenyl-4-ylmethyl)-imidazol-1-ylmethyl]-benzoic acid

5 4-[4-(2,4-Dichloro-phenyl)-2-(3'-trifluoromethoxy-biphenyl-4-ylmethyl)-imidazol-1-ylmethyl]-benzoic acid (50 mg, 83% yield) is prepared according to general procedure F using 4-[4-(2,4-dichloro-phenyl)-2-(3'-trifluoromethoxy-biphenyl-4-ylmethyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester (61 mg, 0.1 mmol).

LCMS:  $m/z$  597 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (DMSO-d<sub>6</sub>, 400 MHz):  $\delta$  4.14 (s, 2H), 5.37 (s, 2H), 7.13 (d, 2H), 7.24 (d, 2H), 7.44 (dd, 1H), 7.57 (d, 2H), 7.60 (d, 1H), 7.65-7.69 (m, 10 4H), 7.81 (d, 2H), 7.94 (s, 1H), 8.17 (d, 1H) ppm.

**Example 286**4-[4-(2,4-Dichloro-phenyl)-2-(3'-methanesulfonyl-biphenyl-4-ylmethyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester

15 4-[4-(2,4-Dichloro-phenyl)-2-(3'-methanesulfonyl-biphenyl-4-ylmethyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester (68 mg, 56% yield) is prepared according to general procedure B using 4-[2-(4-bromo-benzyl)-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester (106 mg, 0.2 mmol) and (3-methylsulfonylphenyl)boronic acid (48 mg, 0.24 mmol).

20 LCMS:  $m/z$  605 ( $M+H$ )<sup>+</sup>.

**Example 287**4-[4-(2,4-Dichloro-phenyl)-2-(3'-methanesulfonyl-biphenyl-4-ylmethyl)-imidazol-1-ylmethyl]-benzoic acid

25 4-[4-(2,4-Dichloro-phenyl)-2-(3'-methanesulfonyl-biphenyl-4-ylmethyl)-imidazol-1-ylmethyl]-benzoic acid (51 mg, 86% yield) is prepared according to general procedure F

using 4-[4-(2,4-dichloro-phenyl)-2-(3'-methanesulfonyl-biphenyl-4-ylmethyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester (61 mg, 0.1 mmol).

LCMS:  $m/z$  591 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (DMSO-d<sub>6</sub>, 400 MHz):  $\delta$  3.28 (s, 3H), 4.14 (s, 2H), 5.37 (s, 2H), 7.13 (d, 2H), 7.24 (d, 2H), 7.44 (dd, 1H), 7.57 (d, 2H), 7.60 (d, 1H),  
5 7.65-7.69 (m, 4H), 7.81 (d, 2H), 7.94 (s, 1H), 8.17 (d, 1H) ppm.

### Example 288

4-[4-(2,4-Dichloro-phenyl)-2-(4'-methanesulfonyl-biphenyl-4-ylmethyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester

10 4-[4-(2,4-Dichloro-phenyl)-2-(4'-methanesulfonyl-biphenyl-4-ylmethyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester (74 mg, 61% yield) is prepared according to general procedure B using 4-[2-(4-bromo-benzyl)-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester (106 mg, 0.2 mmol) and (4-methylsulfonylphenyl)boronic acid (48 mg, 0.24 mmol).

15 LCMS:  $m/z$  605 ( $M+H$ )<sup>+</sup>.

### Example 289

4-[4-(2,4-Dichloro-phenyl)-2-(4'-methanesulfonyl-biphenyl-4-ylmethyl)-imidazol-1-ylmethyl]-benzoic acid

20 4-[4-(2,4-Dichloro-phenyl)-2-(4'-methanesulfonyl-biphenyl-4-ylmethyl)-imidazol-1-ylmethyl]-benzoic acid (53 mg, 89% yield) is prepared according to general procedure F using 4-[4-(2,4-dichloro-phenyl)-2-(4'-methanesulfonyl-biphenyl-4-ylmethyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester (61 mg, 0.1 mmol).

25 LCMS:  $m/z$  591 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (DMSO-d<sub>6</sub>, 400 MHz):  $\delta$  3.26 (s, 3H), 4.13 (s, 2H), 5.36 (s, 2H), 7.13 (d, 2H), 7.24 (d, 2H), 7.44 (dd, 1H), 7.57 (d, 2H), 7.60 (d, 1H), 7.65 (d, 2H), 7.72 (d, 2H), 7.81 (d, 2H), 7.94 (s, 1H), 8.17 (d, 1H) ppm.

**Example 290**

5 4-[4-(2,4-Dichloro-phenyl)-2-(4-{[2-(4-methanesulfonyl-phenyl)-acetylamino]-methyl}-phenyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester

4-(tert-Butoxycarbonylamino-methyl)-benzoic acid (502 mg, 2 mmol) is treated according to general procedure A using 2,4-dichlorophenacyl bromide to give {4-[4-(2,4-dichloro-phenyl)-1H-imidazol-2-yl]-benzyl}-carbamic acid tert-butyl ester, which is then  
10 treated as described in general procedure E using methyl 4-(bromomethyl)benzoate to give 4-[2-[4-(tert-butoxycarbonylamino-methyl)-phenyl]-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester, which is then treated with hydrogen chloride in ethyl ether and then coupled with 4-methylsulphonylphenylacetic acid according to general procedure G to afford the title compound 4-[4-(2,4-dichloro-phenyl)-2-(4-{[2-(4-  
15 methanesulfonyl-phenyl)-acetylamino]-methyl}-phenyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester (239 mg, 18% total yield).

LCMS:  $m/z$  662 (M+H)<sup>+</sup>.

**Example 291**

20 4-[4-(2,4-Dichloro-phenyl)-2-(4-{[2-(4-methanesulfonyl-phenyl)-acetylamino]-methyl}-phenyl)-imidazol-1-ylmethyl]-benzoic acid

4-[4-(2,4-Dichloro-phenyl)-2-(4-{[2-(4-methanesulfonyl-phenyl)-acetylamino]-methyl}-phenyl)-imidazol-1-ylmethyl]-benzoic acid (92 mg, 71% yield) is prepared according to general procedure F using 4-[4-(2,4-dichloro-phenyl)-2-(4-{[2-(4-  
25 methanesulfonyl-phenyl)-acetylamino]-methyl}-phenyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester (133 mg, 0.2 mmol).

LCMS:  $m/z$  648 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (DMSO-d<sub>6</sub>, 400 MHz):  $\delta$  3.16 (s, 3H), 3.51 (s, 2H), 4.25 (d, 2H), 5.38 (s, 2H), 7.13 (d, 2H), 7.24 (d, 2H), 7.46-7.58 (m, 3H), 7.60 (d, 1H), 7.65 (d, 2H), 7.72 (d, 2H), 7.81 (d, 2H), 7.94 (s, 1H), 8.15 (d, 1H) ppm.

## 5 Example 292

### 4-{4-(2,4-Difluoro-phenyl)-2-[2-(4'-ethoxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid

**Step1:** *Trans*-4-bromocinnamic acid (2.27 g, 10 mmol) is treated according to general procedure A using 2,4-difluorophenacyl bromide to give the intermediate 2-[2-(4-bromo-phenyl)-(E)-vinyl]-4-(2,4-difluoro-phenyl)-1H-imidazole, which is then treated as described in general procedure E using methyl 4-(bromomethyl)benzoate to give 4-[2-[2-(4-bromo-phenyl)-(E)-vinyl]-4-(2,4-difluoro-phenyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester (1.68 g, 33% total yield).

LCMS:  $m/z$  510 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (DMSO-d<sub>6</sub>, 400 MHz):  $\delta$  3.80 (s, 3H), 5.60 (s, 2H), 7.13 (d, 1H), 7.46-7.50 (m, 5H), 7.61 (d, 2H), 7.65 (d, 2H), 7.69 (d, 2H), 7.74 (s, 1H), 7.81 (d, 1H) ppm.

**Step 2:** 4-{4-(2,4-Difluoro-phenyl)-2-[2-(4'-ethoxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid (150 mg, 56% total yield) is prepared according to general procedure B using 4-[2-[2-(4-bromo-phenyl)-(E)-vinyl]-4-(2,4-difluoro-phenyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester (255 mg, 0.5 mmol) and 4-ethoxyphenylboronic acid (100 mg, 0.6 mmol), followed by ester-hydrolysis according to general procedure F.

LCMS:  $m/z$  537 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (DMSO-d<sub>6</sub>, 400 MHz):  $\delta$  1.34 (t, 3H), 4.06 (q, 2H), 5.63 (s, 2H), 7.13 (d, 2H), 7.24 (d, 2H), 7.33 (d, 1H), 7.39 (d, 1H), 7.47 (d, 2H), 7.58 (d, 1H), 7.62 (d, 1H), 7.65-7.69 (m, 4H), 7.81 (d, 2H), 7.94 (s, 1H), 8.17 (d, 1H) ppm.

## Example 293

4-{4-(2,4-Difluoro-phenyl)-2-[2-(4'-ethoxy-biphenyl-4-yl)-ethyl]-imidazol-1-ylmethyl}-benzoic acid

4-{4-(2,4-Difluoro-phenyl)-2-[2-(4'-ethoxy-biphenyl-4-yl)-ethyl]-imidazol-1-ylmethyl}-benzoic acid (18 mg, 67% yield) is prepared according to general procedure V using 4-{4-(2,4-difluoro-phenyl)-2-[2-(4'-ethoxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid (27 mg, 0.05 mmol).

LCMS:  $m/z$  539 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (DMSO-d<sub>6</sub>, 400 MHz):  $\delta$  1.32 (t, 3H), 2.86 (m, 2H), 2.96 (m, 2H), 4.03 (q, 2H), 5.32 (s, 2H), 7.13 (d, 2H), 7.24 (d, 2H), 7.39 (d, 1H), 7.47 (d, 2H), 7.62 (d, 1H), 7.65-7.69 (m, 4H), 7.81 (d, 2H), 7.94 (s, 1H), 8.17 (d, 1H) ppm.

**Example 294**

4-{4-(2,4-Difluoro-phenyl)-2-[2-(4'-hydroxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid

4-{4-(2,4-Difluoro-phenyl)-2-[2-(4'-hydroxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid (72 mg, 71% total yield) is prepared according to general procedure C using 4-{4-(2,4-difluoro-phenyl)-2-[2-(4'-ethoxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid (107 mg, 0.2 mmol).

LCMS:  $m/z$  509 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (DMSO-d<sub>6</sub>, 400 MHz):  $\delta$  5.62 (s, 2H), 7.13 (d, 2H), 7.24 (d, 2H), 7.33 (d, 1H), 7.39 (d, 1H), 7.47 (d, 2H), 7.58 (d, 1H), 7.62 (d, 1H), 7.65-7.69 (m, 4H), 7.81 (d, 2H), 7.94 (s, 1H), 8.16 (d, 1H) ppm.

**Example 295**

4-[2-[2-(4'-Butoxy-biphenyl-4-yl)-(E)-vinyl]-4-(2,4-difluoro-phenyl)-imidazol-1-ylmethyl]-benzoic acid

4-[2-[2-(4'-Butoxy-biphenyl-4-yl)-(E)-vinyl]-4-(2,4-difluoro-phenyl)-imidazol-1-ylmethyl]-benzoic acid (28 mg, 49% total yield) is prepared according to general procedure E using 4-{4-(2,4-difluoro-phenyl)-2-[2-(4'-hydroxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid (51 mg, 0.1 mmol) and 1-bromobutane, followed by ester-hydrolysis according to general procedure F.

LCMS:  $m/z$  565 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (DMSO-d<sub>6</sub>, 400 MHz):  $\delta$  1.04 (t, 3H), 1.46 (m, 2H), 1.90 (m, 2H), 4.18 (t, 2H), 5.61 (s, 2H), 7.13 (d, 2H), 7.24 (d, 2H), 7.33 (d, 1H), 7.39 (d, 1H), 7.47 (d, 2H), 7.58 (d, 1H), 7.62 (d, 1H), 7.65-7.69 (m, 4H), 7.81 (d, 2H), 7.94 (s, 1H), 8.17 (d, 1H) ppm.

#### Example 296

4-{4-(2,4-Difluoro-phenyl)-2-[2-(3'-trifluoromethyl-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid

4-{4-(2,4-Difluoro-phenyl)-2-[2-(3'-trifluoromethyl-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid (87 mg, 31% total yield) is prepared according to general procedure B using 4-[2-[2-(4-bromo-phenyl)-(E)-vinyl]-4-(2,4-difluoro-phenyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester (255 mg, 0.5 mmol) and 3-(trifluoromethyl)benzeneboronic acid (114 mg, 0.6 mmol), followed by ester-hydrolysis according to general procedure F.

LCMS:  $m/z$  561 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (DMSO-d<sub>6</sub>, 400 MHz):  $\delta$  5.60 (s, 2H), 7.13 (d, 2H), 7.24 (d, 2H), 7.33 (d, 1H), 7.39 (d, 1H), 7.47 (d, 2H), 7.58 (d, 1H), 7.62 (d, 1H), 7.65-7.69 (m, 4H), 7.81 (d, 2H), 7.94 (s, 1H), 8.18 (d, 1H) ppm.

#### Example 297

4-{4-(2,4-Difluoro-phenyl)-2-[2-(3'-trifluoromethyl-biphenyl-4-yl)-ethyl]-imidazol-1-ylmethyl}-benzoic acid



4-{4-(2,4-Difluoro-phenyl)-2-[2-(3'-trifluoromethyl-biphenyl-4-yl)-ethyl]-imidazol-1-ylmethyl}-benzoic acid (21 mg, 74% yield) is prepared according to general procedure V using 4-{4-(2,4-difluoro-phenyl)-2-[2-(3'-trifluoromethyl-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid (28 mg, 0.05 mmol).

- 5 LCMS:  $m/z$  563 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (DMSO-d<sub>6</sub>, 400 MHz):  $\delta$  2.88 (m, 2H), 2.97 (m, 2H), 5.32 (s, 2H), 7.13 (d, 2H), 7.24 (d, 2H), 7.39 (d, 1H), 7.47 (d, 2H), 7.62 (d, 1H), 7.65-7.69 (m, 4H), 7.81 (d, 2H), 7.94 (s, 1H), 8.17 (d, 1H) ppm.

### Example 298

- 10 4-{4-(2,4-Dichloro-phenyl)-2-[2-(4-nitro-phenyl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid

- 4-(2,4-Dichloro-phenyl)-2-[2-(4-nitro-phenyl)-(E)-vinyl]-1H-imidazole (1.98 g, 5.5 mmol) was treated with methyl 4-bromomethyl benzoate using general procedure E to provide 4-{4-(2,4-dichloro-phenyl)-2-[2-(4-nitro-phenyl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid methyl ester (753 mg, 27% yield). 30 mg (0.059 mmol) of the ester was hydrolyzed according to general procedure F to provide 4-{4-(2,4-dichloro-phenyl)-2-[2-(4-nitro-phenyl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid (24 mg, 82% yield).

- LCMS:  $m/z$  494 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  5.53 (s, 2H), 7.18 (d, 1H), 7.31 (d, 2H), 7.38 (dd, 1H), 7.49 (d, 1H), 7.65-7.72 (m, 3H), 7.79 (s, 1H), 8.06 (m, 3H), 8.23 (d, 2H) ppm.

### Example 299

4-[2-[2-(4-Amino-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester

- 25 4-{4-(2,4-Dichloro-phenyl)-2-[2-(4-nitro-phenyl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid methyl ester (453 mg, 0.89 mmol) was reduced according to general

procedure K to provide 4-[2-[2-(4-amino-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester (350 mg, 82% yield).

LCMS:  $m/z$  478 (M+H)<sup>+</sup>.

## 5 Example 300

4-[2-[2-(4-Amino-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid

4-[2-[2-(4-Amino-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester (17 mg, 0.036 mmol) was hydrolyzed according to general  
10 procedure F to provide 4-[2-[2-(4-amino-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid (5.4 mg, 33% yield).

LCMS:  $m/z$  464 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (DMSO, 400 MHz):  $\delta$  5.52 (s, 2H), 6.54 (d, 2H), 6.90 (d, 1H), 7.25-7.34 (m, 4H), 7.38 (d, 1H), 7.49 (dd, 1H), 7.63 (d, 1H), 7.90 (d, 2H), 8.05 (s, 1H), 8.27 (d, 1H) ppm.

15

## Example 301

4-[2-[2-[4-(Butane-1-sulfonylamino)-phenyl]-(E)-vinyl]-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester

4-[2-[2-(4-Amino-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-  
20 benzoic acid methyl ester (69 mg, 0.14 mmol) was treated with *n*-butanesulfonyl chloride according to general procedure L to provide 4-[2-[2-[4-(butane-1-sulfonylamino)-phenyl]-(E)-vinyl]-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester (48 mg, 57% yield).

LCMS:  $m/z$  598 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz):  $\delta$  0.90 (t, 3H), 1.42 (m, 2H),  
25 1.80 (m, 2H), 3.10 (m, 2H), 3.93 (s, 3H), 5.34 (s, 2H), 6.66 (s, 1H), 6.73 (d, 1H), 7.17 (d,

2H), 7.23 (d, 2H), 7.34 (dd, 1H), 7.41 (d, 2H), 7.43 (d, 1H), 7.64 (d, 1H), 7.71 (s, 1H), 8.05 (d, 2H), 8.26 (d, 1H) ppm.

### Example 302

5 4-[2-{2-[4-(Butane-1-sulfonylamino)-phenyl]-(E)-vinyl}-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid

4-[2-{2-[4-(Butane-1-sulfonylamino)-phenyl]-(E)-vinyl}-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester (45 mg, 0.075 mmol) was hydrolyzed according to general procedure F to provide 4-[2-{2-[4-(butane-1-sulfonylamino)-phenyl]-(E)-vinyl}-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid (30 mg, 68% yield).

LCMS:  $m/z$  584 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (DMSO, 400 MHz):  $\delta$  0.83 (t, 3H), 1.35 (m, 2H), 1.64 (m, 2H), 3.12 (m, 2H), 5.60 (s, 2H), 6.66 (s, 1H), 7.17-7.23 (m, 3H), 7.34 (d, 2H), 7.46-7.53 (m, 2H), 7.62 (d, 2H), 7.65 (d, 1H), 7.93 (d, 2H), 8.09 (s, 1H), 8.28 (d, 1H), 9.93 (br s, 1H), 12.82 (br s, 1H) ppm.

15

### Example 303

4-[2-{2-[4-(4-Butyl-benzenesulfonylamino)-phenyl]-(E)-vinyl}-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester

4-[2-{2-[4-(Amino-phenyl)]-(E)-vinyl}-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester (71 mg, 0.15 mmol) was treated with 4-*n*-butylbenzenesulfonyl chloride according to general procedure L to provide 4-[2-{2-[4-(4-butyl-benzenesulfonylamino)-phenyl]-(E)-vinyl}-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester (95 mg, 93% yield).

LCMS:  $m/z$  674 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz):  $\delta$  0.90 (t, 3H), 1.30 (m, 2H), 1.57 (m, 2H), 2.62 (t, 2H), 3.92 (s, 3H), 5.31 (s, 2H), 6.69 (d, 1H), 6.98-7.05 (m, 3H), 7.21 (m, 4H), 7.28-7.33 (m, 3H), 7.42 (d, 1H), 7.58 (d, 1H), 7.68 (m, 3H), 8.03 (d, 2H), 8.24 (d, 1H) ppm.

**Example 304**

4-[2-{2-[4-(4-Butyl-benzenesulfonylamino)-phenyl]-(E)-vinyl}-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid

5            4-[2-{2-[4-(4-Butyl-benzenesulfonylamino)-phenyl]-(E)-vinyl}-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester (92 mg, 0.14 mmol) was hydrolyzed according to general procedure F to provide 4-[2-{2-[4-(4-butyl-benzenesulfonylamino)-phenyl]-(E)-vinyl}-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid (82 mg, 91% yield).

10            LCMS:  $m/z$  660 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (DMSO, 400 MHz):  $\delta$  0.85 (t, 3H), 1.26 (m, 2H), 1.51 (m, 2H), 2.60 (t, 2H), 5.57 (s, 2H), 7.09 (d, 2H), 7.15 (d, 1H), 7.33 (d, 2H), 7.37 (d, 2H), 7.42 (d, 1H), 7.48-7.54 (m, 3H), 7.64 (d, 1H), 7.69 (d, 2H), 7.92 (d, 2H), 8.07 (s, 1H), 8.25 (d, 1H), 10.40 (s, 1H), 12.94 (br s, 1H) ppm.

15            **Example 305**

4-[2-{2-[4-(4-Butyl-benzylamino)-phenyl]-(E)-vinyl}-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester

20            4-[2-[2-(4-Amino-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester (70 mg, 0.15 mmol) was treated with 4-*n*-butylbenzaldehyde according to general procedure U to provide 4-[2-{2-[4-(4-butyl-benzylamino)-phenyl]-(E)-vinyl}-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester (59 mg, 63% yield).

25            LCMS:  $m/z$  624 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz):  $\delta$  0.92 (t, 3H), 1.35 (m, 2H), 1.58 (m, 2H), 2.60 (t, 2H), 3.90 (s, 3H), 4.29 (s, 2H), 5.28 (s, 2H), 6.54-6.60 (m, 3H), 7.15 (d, 2H), 7.20-7.30 (m, 6H), 7.32 (dd, 1H), 7.41 (d, 1H), 7.59 (d, 1H), 7.65 (s, 1H), 8.03 (d, 2H), 8.29 (d, 1H) ppm.

4-(4-(2,4-Dichloro-phenyl)-2-{2-[4-(3-trifluoromethyl-benzenesulfonylamino)-phenyl]-(E)-vinyl}-imidazol-1-ylmethyl)-benzoic acid methyl ester

4-[2-[2-(4-Amino-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester (66 mg, 0.14 mmol) was treated with 3-trifluoromethylbenzenesulfonyl chloride according to general procedure L to provide 4-(4-(2,4-dichloro-phenyl)-2-{2-[4-(3-trifluoromethyl-benzenesulfonylamino)-phenyl]-(E)-vinyl}-imidazol-1-ylmethyl)-benzoic acid methyl ester (87 mg, 92% yield).

LCMS:  $m/z$  686 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz):  $\delta$  3.92 (s, 3H), 5.34 (s, 2H), 6.67 (br s, 1H), 6.71 (d, 1H), 7.03 (d, 2H), 7.22 (d, 2H), 7.31-7.36 (m, 3H), 7.43 (d, 1H), 7.56-7.62 (m, 2H), 7.70 (s, 1H), 7.80 (d, 1H), 7.91 (d, 1H), 8.01-8.06 (m, 3H), 8.24 (d, 1H) ppm.

**Example 309**

4-(4-(2,4-Dichloro-phenyl)-2-{2-[4-(4-trifluoromethyl-benzenesulfonylamino)-phenyl]-(E)-vinyl}-imidazol-1-ylmethyl)-benzoic acid methyl ester

4-[2-[2-(4-Amino-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester (66 mg, 0.14 mmol) was treated with 4-trifluoromethylbenzenesulfonyl chloride according to general procedure L to provide 4-(4-(2,4-dichloro-phenyl)-2-{2-[4-(4-trifluoromethyl-benzenesulfonylamino)-phenyl]-(E)-vinyl}-imidazol-1-ylmethyl)-benzoic acid methyl ester (87 mg, 92% yield).

LCMS:  $m/z$  686 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz):  $\delta$  3.92 (s, 3H), 5.33 (s, 2H), 6.69-6.73 (m, 2H), 7.04 (d, 2H), 7.22 (d, 2H), 7.31-7.36 (m, 3H), 7.43 (d, 1H), 7.60 (d, 1H), 7.71 (m, 3H), 7.88 (d, 2H), 8.04 (d, 2H), 8.24 (d, 1H) ppm.

**Example 310**

4-(4-(2,4-Dichloro-phenyl)-2-{2-[4-(3-trifluoromethyl-benzenesulfonylamino)-phenyl]-(E)-vinyl}-imidazol-1-ylmethyl)-benzoic acid

4-(4-(2,4-Dichloro-phenyl)-2-{2-[4-(3-trifluoromethyl-benzenesulfonylamino)-phenyl]-(E)-vinyl}-imidazol-1-ylmethyl)-benzoic acid methyl ester (79 mg, 0.12 mmol) was hydrolyzed according to general procedure F to provide 4-(4-(2,4-dichloro-phenyl)-2-{2-[4-(3-trifluoromethyl-benzenesulfonylamino)-phenyl]-(E)-vinyl}-imidazol-1-ylmethyl)-benzoic acid (46 mg, 59% yield).

LCMS:  $m/z$  672 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (DMSO, 400 MHz):  $\delta$  5.58 (s, 2H), 7.09 (d, 2H), 7.18 (d, 1H), 7.33 (d, 2H), 7.43 (d, 1H), 7.50 (dd, 1H), 7.56 (d, 2H), 7.64 (d, 1H), 7.82 (t, 1H), 7.93 (d, 2H), 8.01-8.06 (m, 3H), 8.08 (s, 1H), 8.25 (d, 1H), 10.59 (s, 1H), 12.96 (br s, 1H) ppm.

### Example 311

4-(4-(2,4-Dichloro-phenyl)-2-{2-[4-(4-trifluoromethyl-benzenesulfonylamino)-phenyl]-(E)-vinyl}-imidazol-1-ylmethyl)-benzoic acid

4-(4-(2,4-Dichloro-phenyl)-2-{2-[4-(4-trifluoromethyl-benzenesulfonylamino)-phenyl]-(E)-vinyl}-imidazol-1-ylmethyl)-benzoic acid methyl ester (79 mg, 0.12 mmol) was hydrolyzed according to general procedure F to provide 4-(4-(2,4-dichloro-phenyl)-2-{2-[4-(4-trifluoromethyl-benzenesulfonylamino)-phenyl]-(E)-vinyl}-imidazol-1-ylmethyl)-benzoic acid (54 mg, 70% yield).

LCMS:  $m/z$  672 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (DMSO, 400 MHz):  $\delta$  5.59 (s, 2H), 7.10 (d, 2H), 7.17 (d, 1H), 7.33 (d, 2H), 7.43 (d, 1H), 7.49 (dd, 1H), 7.55 (d, 2H), 7.64 (d, 1H), 7.92 (d, 2H), 7.97 (s, 4H), 8.08 (s, 1H), 8.25 (d, 1H), 10.68 (br s, 1H), 12.96 (br s, 1H) ppm.

### Example 312

4-(4-(2,4-Dichloro-phenyl)-2-{2-[4-(toluene-4-sulfonylamino)-phenyl]-(E)-vinyl}-imidazol-1-ylmethyl)-benzoic acid methyl ester

4-[2-[2-(4-Amino-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester (35 mg, 0.073 mmol) was treated with *p*-toluenesulfonyl

**Example 306**

4-[2-{2-[4-(4-Butyl-benzylamino)-phenyl]-(E)-vinyl}-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid

5 4-[2-{2-[4-(4-Butyl-benzylamino)-phenyl]-(E)-vinyl}-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester (55 mg, 0.09 mmol) was hydrolyzed according to general procedure F to provide 4-[2-{2-[4-(4-butyl-benzylamino)-phenyl]-(E)-vinyl}-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid (39 mg, 72% yield).

LCMS:  $m/z$  610 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (DMSO, 400 MHz):  $\delta$  0.90 (t, 3H), 1.29 (m, 2H), 1.53 (m, 2H), 2.55 (t, 2H), 4.24 (d, 2H), 5.55 (s, 2H), 6.56 (d, 2H), 6.89 (d, 1H), 7.13 (d, 10 2H), 7.25 (d, 2H), 7.31-7.40 (m, 5H), 7.49 (dd, 1H), 7.63 (d, 1H), 7.92 (d, 2H), 8.02 (s, 1H), 8.27 (d, 1H), 12.95 (br s, 1H) ppm.

**Example 307**

15 4-[2-{2-[4-(4-Butyl-benzenesulfonylamino)-phenyl]-ethyl}-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid

4-[2-{2-[4-(4-Butyl-benzenesulfonylamino)-phenyl]-(E)-vinyl}-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid (16 mg, 0.024 mmol) was reduced according to general procedure V to provide 4-[2-{2-[4-(4-butyl-benzenesulfonylamino)-phenyl]-ethyl}-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid (8 mg, 50% yield).

20 LCMS:  $m/z$  662 ( $M+H$ )<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  0.89 (t, 3H), 1.28 (m, 2H), 1.50 (m, 2H), 2.55 (t, 2H), 2.86 (m, 4H), 4.96 (s, 2H), 6.92 (d, 2H), 6.97 (d, 2H), 7.09 (d, 2H), 7.22 (d, 2H), 7.38 (dd, 1H), 7.51 (d, 1H), 7.58 (s, 1H), 7.63 (d, 2H) 7.88 (d, 1H), 7.97 (d, 2H) ppm.

**25 Example 308**

chloride according to general procedure L to provide 4-(4-(2,4-dichloro-phenyl)-2-{2-[4-(toluene-4-sulfonylamino)-phenyl]-(E)-vinyl}-imidazol-1-ylmethyl)-benzoic acid methyl ester (39 mg, 84% yield).

LCMS:  $m/z$  632 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz):  $\delta$  2.36 (s, 3H), 3.90 (s, 3H),  
5 5.30 (s, 2H), 6.68 (d, 1H), 7.03 (d, 2H), 7.20 (d, 4H), 7.26-7.32 (m, 3H), 7.41 (d, 1H),  
7.57 (d, 1H), 7.65 (d, 2H), 7.68 (s, 1H), 8.03 (d, 2H), 8.23 (d, 1H) ppm.

### Example 313

10 4-(4-(2,4-Dichloro-phenyl)-2-{2-[4-(toluene-4-sulfonylamino)-phenyl]-(E)-vinyl}-imidazol-1-ylmethyl)-benzoic acid

4-(4-(2,4-Dichloro-phenyl)-2-{2-[4-(toluene-4-sulfonylamino)-phenyl]-(E)-vinyl}-imidazol-1-ylmethyl)-benzoic acid methyl ester (36 mg, 0.057 mmol) was hydrolyzed according to general procedure F to provide 4-(4-(2,4-dichloro-phenyl)-2-{2-[4-(toluene-4-sulfonylamino)-phenyl]-(E)-vinyl}-imidazol-1-ylmethyl)-benzoic acid (26 mg, 74% yield).

15 LCMS:  $m/z$  618 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  2.33 (s, 3H), 5.45 (s, 2H),  
6.95 (d, 1H), 7.07 (d, 2H), 7.23 (d, 2H), 7.28 (d, 2H), 7.36 (m, 3H), 7.43 (d, 1H), 7.48 (d,  
1H), 7.63 (d, 2H) 7.77 (s, 1H), 7.95-8.00 (m, 3H) ppm.

### Example 314

20 4-[2-(2-{4-[(4-Butyl-benzenesulfonyl)-methyl-amino]-phenyl}-(E)-vinyl)-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid

4-[2-{2-[4-(4-Butyl-benzenesulfonylamino)-phenyl]-(E)-vinyl}-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid (24 mg, 0.036 mmol) was treated with sodium hydride and methyl iodide according to general procedure P, then the methyl ester which  
25 formed was hydrolyzed according to general procedure F to provide 4-[2-(2-{4-[(4-butyl-benzenesulfonyl)-methyl-amino]-phenyl}-(E)-vinyl)-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid (11 mg, 45% yield).



LCMS:  $m/z$  674 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (CD<sub>3</sub>OD, 400 MHz):  $\delta$  0.95 (t, 3H), 1.38 (m, 2H), 1.64 (m, 2H), 2.70 (t, 2H), 3.18 (s, 3H), 5.48 (s, 2H), 6.95 (d, 1H), 7.09 (d, 2H), 7.28-7.33 (m, 4H), 7.37 (dd, 1H), 7.43-7.49 (m, 5H), 7.58 (d, 1H), 7.74 (s, 1H), 8.03-8.09 (m, 3H) ppm.

5

**Example 315**

4-{4-(2,4-Dichloro-phenyl)-2-[2-(4'-trifluoromethyl-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid methyl ester

*Trans*-4-bromo cinnamic acid (227 mg, 1mmol) was reacted with 2-bromo-2,4-dichloro acetophenone (267 mg, 1 mmol) according to general procedure A and obtained 2-[2-(4-bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (412 mg, 1 mmol) was N-alkylated with methyl 4-(bromomethyl) benzoate (229 mg, 1 mmol) following general procedure E. The resulted 4-[2-[2-(4-bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)]-imidazol-1-yl-methyl-benzoic acid methyl ester (542 mg, 1 mmol) was coupled with 4-(trifluoromethyl)-phenyl boronic acid (189 mg, 1 mmol) following General Procedure B to give 4-{4-(2,4-dichloro-phenyl)-2-[2-(4'-trifluoromethyl-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-yl-methyl} benzoic acid methyl ester (313 mg, 51%).

LCMS: 607 (M+H)<sup>+</sup>.

20 **Example 316**

4-{4-(2,4-Dichloro-phenyl)-2-[2-(4'-trifluoromethyl-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid

4-{4-(2,4-dichloro-phenyl)-2-[2-(4'-trifluoromethyl-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-yl-methyl} benzoic acid methyl ester (303 mg, 0.5 mmol) was hydrolyzed according to General Procedure F to give 4-{4-(2,4-Dichloro-phenyl)-2-[2-(4'-trifluoromethyl-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid (197 mg, 67%).

LCMS: 593 (M+H)<sup>+</sup> <sup>1</sup>H NMR (DMSO, 400 MHz): δ 5.82 (s, 2H), 7.48-7.50 (m, 2H), 7.56 (s, 1H), 7.60-7.64 (m, 3H), 7.81-7.88 (m, 4H), 7.91-7.99 (m, 4H), 8.14-8.19 (m, 3H), 8.32 (s, 1H) ppm.

## 5 Example 317

4-{4-(2,4-Dichloro-phenyl)-2-[2-(4'-trifluoromethoxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid methyl ester

*Trans* 4-bromo cinnamic acid (227 mg, 1mmol) was reacted with 2-bromo-2,4-dichloro acetophenone (267 mg, 1 mmol) according to general procedure A and  
10 obtained 2-[2-(4-bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl))-1H-imidazole (412 mg, 1 mmol) was N-alkylated with methyl 4 - (bromomethyl) benzoate (229 mg, 1 mmol) following general procedure E. The resulted 4-[2-[2-(4-bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl))-imidazol-1yl-methyl]-benzoic acid methyl ester (542 mg, 1 mmol) was  
15 coupled with 4-(trifluoromethoxy)- phenyl boronic acid (205 mg, 1 mmol) following General Procedure B to give 4-{4-(2,4-dichloro-phenyl)-2-[2-(4'-trifluoromethoxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1yl-methyl} benzoic acid methyl ester (324 mg, 52%).

LCMS: 623 (M+H)<sup>+</sup>

## Example 318

20 4-{4-(2,4-Dichloro-phenyl)-2-[2-(4'-trifluoromethoxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid

4-{4-(2,4-dichloro-phenyl)-2-[2-(4'-trifluoromethoxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1yl-methyl} benzoic acid methyl ester (311 mg, 0.5 mmol) was hydrolyzed according to General Procedure F to give 4-{4-(2,4-Dichloro-phenyl)-2-[2-(4'-trifluoromethoxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid (198 mg,  
25 65%).

LCMS: 609 (M+H)<sup>+</sup> <sup>1</sup>H NMR (DMSO, 400 MHz): δ 5.66 (s, 2H), 7.36-7.40 (m, 2H), 7.44-7.46 (m, 2H), 7.51 (d, 1H), 7.52 (d, 1H), 7.53 (d, 1H), 7.59 (s, 1H), 7.63-7.66 (m,

2H), 7.70-7.72 (m, 2H), 7.76-7.84 (m, 2H), 7.93-7.95 (m, 2H), 8.13 (s, 1H), 8.27 (d, 1H) ppm.

### Example 319

5 4-[2-[2-(4'-Butoxy-biphenyl-4-yl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester

*Trans* 4-bromo cinnamic acid (227 mg, 1mmol) was reacted with 2-bromo-2,4-dichloro acetophenone (267 mg, 1 mmol) according to general procedure A and obtained 2-[2-(4-bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (412 mg, 10 1 mmol) was N-alkylated with methyl 4-(bromomethyl) benzoate (229 mg, 1 mmol) following general procedure E. The resulted 4-[2-[2-(4-bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)]-imidazol-1-yl-methyl-benzoic acid methyl ester (542 mg, 1 mmol) was coupled with 4-butoxy-phenyl boronic acid (195 mg, 1 mmol) following General Procedure B to give 4-2-[2-(4'-butoxy-biphenyl-4-yl)-(E)-vinyl]-4-{4-(2,4-dichloro-phenyl)-imidazol-1-yl-methyl} benzoic acid methyl ester (315 mg, 51%). 15

LCMS: 611 (M+H)<sup>+</sup>.

### Example 320

20 4-[2-[2-(4'-Butoxy-biphenyl-4-yl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid

4-2-[2-(4'-butoxy-biphenyl-4-yl)-(E)-vinyl]-4-{4-(2,4-dichloro-phenyl)-imidazol-1-yl-methyl} benzoic acid methyl ester (305 mg, 0.5 mmol) was hydrolyzed according to General Procedure F to give 4-[2-[2-(4'-Butoxy-biphenyl-4-yl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid (198 mg, 66%)

25 LCMS: 597 (M+H)<sup>+</sup> <sup>1</sup>H NMR (DMSO, 400 MHz): δ 0.96 (t, 3H), 1.43-1.45 (m, 2H), 1.69-1.73 (m, 2H), 4.02 (q, 2H), 5.64 (s, 2H), 7.02 (d, 1H), 7.29 (s, 1H), 7.33-7.37 (m,

4H), 7.52-7.54 (m, 4H), 7.58-7.64 (m, 4H), 7.65 (d, 1H), 7.92 (d, 1H), 8.10 (s, 1H), 8.27 (d, 1H) ppm.

### Example 321

- 5 4-{4-(2,4-Dichloro-phenyl)-2[2-(3'-trifluoromethyl-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid methyl ester

*Trans* 4-bromo cinnamic acid (227 mg, 1mmol) was reacted with 2-bromo-2,4-dichloro acetophenone (267 mg, 1 mmol) according to general procedure A and obtained 2-[2-(4-bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (412 mg, 1 mmol) was N-alkylated with methyl 4-(bromomethyl) benzoate (229 mg, 1 mmol) following general procedure E. The resulted 4-[2-[2-(4-bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)]-imidazol-1-yl-methyl benzoic acid methyl ester (542 mg, 1 mmol) was coupled with 3-(trifluoromethyl)-phenyl boronic acid (189 mg, 1 mmol) following General Procedure B to give 4-{4-(2,4-dichloro-phenyl)-2[2-(3'-trifluoromethyl-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-yl-methyl} benzoic acid methyl ester (312 mg, 52%).

LCMS: 607 (M+H)<sup>+</sup> <sup>1</sup>H NMR (CDCl<sub>3</sub>, 400 MHz): δ 3.91 (s, 3H), 5.37 (s, 2H) 6.87 (d, 1H), 7.33-7.7.36 (m, 4H), 7.43 (d, 1H), 7.53 (s, 1H), 7.55-7.61 (m, 4H), 7.72-7.75 (m, 4H), 7.83 (s, 1H), 8.05 (s, 1H), 8.30 (d, 1H) ppm.

### 20 Example 322

4-{4-(2,4-Dichloro-phenyl)-2[2-(3'-trifluoromethyl-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid

4-{4-(2,4-Dichloro-phenyl)-2[2-(3'-trifluoromethyl-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-yl-methyl} benzoic acid methyl ester (303 mg, 0.5 mmol) was hydrolyzed according to General Procedure F to give 4-{4-(2,4-Dichloro-phenyl)-2[2-(3'-trifluoromethyl-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid (197 mg, 67%).

LCMS: 593 (M+H)<sup>+</sup> <sup>1</sup>H NMR (DMSO, 400 MHz): δ 5.70 (s, 2H), 7.40-7.42 (m, 4H), 7.47 (s, 1H), 7.55 (d, 2H), 7.71 (d, 2H), 7.81 (s, 1H), 7.94 (d, 2H), 8.01-8.04 (m, 2H), 8.18-8.22 (m, 4H) ppm.

## 5 Example 323

4-{4-(2,4-Dichloro-phenyl)-2-[2-(3'-trifluoromethoxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid methyl ester

*Trans* 4-bromo cinnamic acid (227 mg, 1mmol) was reacted with 2-bromo-2,4-dichloro acetophenone (267 mg, 1 mmol) according to general procedure A and  
10 obtained 2-[2-(4-bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (412 mg, 1 mmol) was N-alkylated with methyl 4 - (bromomethyl) benzoate (229 mg, 1 mmol) following general procedure E. The resulted 4-[2-[2-(4-bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)]-imidazol-1-yl-methyl-benzoic acid methyl ester (542 mg, 1 mmol) was  
15 coupled with 4-(trifluoromethoxy)- phenyl boronic acid (205 mg, 1 mmol) following General Procedure B to give 4-{4-(2,4-dichloro-phenyl)-2-[2-(3'-trifluoromethoxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-yl-methyl} benzoic acid methyl ester (321 mg, 51%).

LCMS: 623 (M+H)<sup>+</sup>.

## Example 324

20 4-{4-(2,4-Dichloro-phenyl)-2-[2-(3'-trifluoromethoxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid

4-{4-(2,4-dichloro-phenyl)-2-[2-(3'-trifluoromethoxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-yl-methyl} benzoic acid methyl ester (311 mg, 0.5 mmol) was hydrolyzed according to General Procedure F to give 4-{4-(2,4-Dichloro-phenyl)-2-[2-(4'-trifluoromethoxy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid (198 mg,  
25 65%).

LCMS: 609 (M+H)<sup>+</sup> <sup>1</sup>H NMR (DMSO, 400 MHz): δ 4.81 (s, 2H), 6.51-6.55 (m, 2H), 6.66 (d, 2H), 6.72-6.75 (m, 4H), 6.76 (s, 1H), 6.77 (s, 1H), 6.81-6.93 (m, 4H), 7.10 (d, 2H), 7.27 (s, 1H), 7.45 (d, 1H) ppm.

## 5 Example 325

4-{4-(2,4-Dichloro-phenyl)-2-[2-(3'-trifluoromethanesulfonylamino-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid methyl ester

*Trans*-4-bromo cinnamic acid (227 mg, 1mmol) was reacted with 2-bromo-2,4-dichloro acetophenone (267 mg, 1 mmol) according to general procedure A and  
 10 obtained 2-[2-(4-bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (412 mg, 1 mmol) was N-alkylated with methyl 4-(bromomethyl) benzoate (229 mg, 1 mmol) following general procedure E. The resulted 4-[2-[2-(4-bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)]-imidazol-1-yl-methyl-benzoic acid methyl ester (542 mg, 1 mmol) was  
 15 coupled with 3-amino-phenyl boronic acid (137mg, 1 mmol) following General Procedure B and obtained 4-{4-(2,4-dichloro-phenyl)-2-[2-(3'-amino-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-yl-methyl} benzoic acid methyl ester (277 mg, 0.5 mmol) was alkylated according to General Procedure P to give 4-{4-(2,4-Dichloro-phenyl)-2-[2-(3'-trifluoromethanesulfonylamino-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid (228 mg, 66%).

20 LCMS: 686 (M+H)<sup>+</sup>.

## Example 326

4-{4-(2,4-Dichloro-phenyl)-2-[2-(3'-trifluoromethanesulfonylamino-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid

25 4-{4-(2,4-Dichloro-phenyl)-2-[2-(3'-trifluoromethanesulfonylamino-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid methyl ester (343 mg, 0.5 mmol) was hydrolyzed according to General Procedure F to give 4-{4-(2,4-Dichloro-phenyl)-2-[2-(3'-

trifluoromethanesulfonylamino-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl]-benzoic acid (238 mg, 70%).

LCMS: 672 (M+H)<sup>+</sup> <sup>1</sup>H NMR (DMSO, 400 MHz): δ 5.61(s, 2H), 6.93 (d, 1H), 7.05 (d, 1H), 7.12-7.14 (m, 2H), 7.24 (s, 1H), 7.30-7.34 (m, 4H), 7.50-7.57 (m, 4H), 7.64 (s, 1H), 7.70 (d, 1H), 7.92 (d, 2H), 8.10 (s, 1H), 8.30 (d, 1H) ppm.

### Example 327

(4-{4-(2,4-Dichloro-phenyl)-2-[2-(3'-methanesulfonyl-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-phenyl)-acetic acid methyl ester

10        *Trans*-4-bromo cinnamic acid (227 mg, 1mmol) was reacted with 2-bromo-2,4-dichloro acetophenone (267 mg, 1 mmol) according to general procedure A and obtained 2-[2-(4-bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (412 mg, 1 mmol) was N-alkylated with (4-Bromomethyl-phenyl)-acetic acid methyl ester (243 mg, 1 mmol) following general procedure E. The resulted {4-[2-[2-(4-Bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-phenyl}-acetic acid methyl ester (556 mg, 1 mmol) was coupled with 3-methanesulfonyl-phenyl boronic acid (200 mg, 1 mmol) following General Procedure B to give (4-{4-(2,4-Dichloro-phenyl)-2-[2-(3'-methanesulfonyl-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-phenyl)-acetic acid methyl ester (321 mg, 50%).

20        LCMS: 631 (M+H)<sup>+</sup>

### Example 328

(4-{4-(2,4-Dichloro-phenyl)-2-[2-(3'-methanesulfonyl-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-phenyl)-acetic acid

25        (4-{4-(2,4-Dichloro-phenyl)-2-[2-(3'-methanesulfonyl-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-phenyl)-acetic acid methyl ester (315 mg, 0.5 mmol) was hydrolyzed according to General Procedure F to give (4-{4-(2,4-Dichloro-phenyl)-2-[2-(3'-

methanesulfonyl-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-phenyl)-acetic acid (198 mg, 64%).

LCMS: 617 (M+H)<sup>+</sup> <sup>1</sup>H NMR (DMSO, 400 MHz): δ 3.31 (s, 3H), 3.46 (s, 2H), 5.51 (s, 2H), 7.23 (s, 1H), 7.45-7.49 (m, 2H), 7.51-7.57 (m, 2H), 7.61-7.64 (m, 2H), 7.75-7.76 (m, 2H), 7.79-7.82 (m, 2H), 7.84-8.07 (m, 4H), 8.10 (d, 1H), 8.19 (s, 1H), 8.25 (d, 1H) ppm.

### Example 329

4-[2-[2-(4'-Ethoxy-biphenyl-4-yl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester

*Trans*-4-bromo cinnamic acid (227 mg, 1mmol) was reacted with 2-bromo-2,4-dichloro acetophenone (267 mg, 1 mmol) according to general procedure A and obtained 2-[2-(4-bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (412 mg, 1 mmol) was N-alkylated with methyl 4 - (bromomethyl) benzoate (229 mg, 1 mmol) following general procedure E. The resulted 4-[2-[2-(4-bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)]-imidazol-1-yl-methyl]-benzoic acid methyl ester (542 mg, 1 mmol) was coupled with 4-ethoxy- phenyl boronic acid (165 mg, 1 mmol) following General Procedure B to give 4-2-[2-(4'-ethoxy-biphenyl-4-yl)-(E)-vinyl]- 4-{4-(2,4-dichloro-phenyl)-imidazol-1-yl-methyl} benzoic acid methyl ester (305 mg, 52%).

LCMS: 583 (M+H)<sup>+</sup>.

### Example 330

4-[2-[2-(4'-Ethoxy-biphenyl-4-yl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid

4-2-[2-(4'-ethoxy-biphenyl-4-yl)-(E)-vinyl]-4-{4-(2,4-dichloro-phenyl)-imidazol-1-yl-methyl} benzoic acid methyl ester (292 mg, 0.5 mmol) was hydrolyzed according to



General Procedure F to give 4-[2-[2-(4'-ethoxy-biphenyl-4-yl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid (198 mg, 69%)

LCMS: 569 (M+H)<sup>+</sup> <sup>1</sup>H NMR (DMSO, 400 MHz): δ 0.96 (t, 3H), 4.02 (q, 2H), 5.64 (s, 2H), 7.02 (d, 1H), 7.29 (s, 1H), 7.33-7.37 (m, 4H), 7.52-7.54 (m, 4H), 7.58-7.64 (m, 4H), 7.65 (d, 1H), 7.92 (d, 1H), 8.10 (s, 1H), 8.27 (d, 1H) ppm.

### Example 331

4-[2-[2-(4'-hydroxy-biphenyl-4-yl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid

10 Step 1: *Trans* 4-bromo cinnamic acid (227 mg, 1mmol) was reacted with 2-bromo-2,4- dichloro acetophenone (267 mg, 1 mmol) according to general procedure A and obtained 2-[2-(4-bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (412 mg, 1 mmol) was N-alkylated with methyl 4 - (bromomethyl) benzoate (229 mg, 1 mmol) following general procedure E. The resulted 4-[2-[2-(4-bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-imidazol-1-yl-methyl]-benzoic acid methyl ester (542 mg, 1 mmol) was  
15 coupled with 4-hydroxy- phenyl boronic acid (137 mg, 1 mmol) following General Procedure B to give 4-2-[2-(4'-hydroxy-biphenyl-4-yl)-(E)-vinyl]- 4-{4-(2,4-dichloro-phenyl)-imidazol-1-yl-methyl} benzoic acid methyl ester (288 mg, 54%)

LCMS: 556 (M+H)<sup>+</sup>

20 Step 2: 4-2-[2-(4'-hydroxy-biphenyl-4-yl)-(E)-vinyl]-4-{4-(2,4-dichloro-phenyl)-imidazol-1-yl-methyl} benzoic acid methyl ester (278 mg, 0.5 mmol) was hydrolyzed according to General Procedure F to give 4-[2-[2-(4'-hydroxy-biphenyl-4-yl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid (168 mg, 62%)

LCMS: 541 (M+H)<sup>+</sup> <sup>1</sup>H NMR (DMSO, 400 MHz): δ 5.68 (s, 2H), 7.12 (d, 1H), 7.36 (s, 1H), 7.37-7.40 (m, 4H), 7.52-7.54 (m, 4H), 7.58-7.64 (m, 4H), 7.66 (d, 1H), 7.91 (d, 1H), 8.09 (s, 1H), 8.21 (d, 1H) ppm.

**Example 332**

4-{4-(2,4-Dichloro-phenyl)-2-[2-(4'-ethoxy-4-methoxy-biphenyl-3-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid methyl ester

*Trans* 5-bromo 2-methoxy cinnamic acid (257 mg, 1mmol) was reacted with 2-bromo-2,4- dichloro acetophenone (267 mg, 1 mmol) according to general procedure A and obtained 2-[2-(5-Bromo-2-methoxy-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (424 mg, 1 mmol) was N-alkylated with methyl 4 - (bromomethyl) benzoate (229 mg, 1 mmol) following general procedure E. The resulted 4-[2-[2-(5-Bromo-2-methoxy-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester (572 mg, 1 mmol) was coupled with 4-ethoxy- phenyl boronic acid (165 mg, 1 mmol) following General Procedure B to give 4-{4-(2,4-Dichloro-phenyl)-2-[2-(4'-ethoxy-4-methoxy-biphenyl-3-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid methyl ester (298 mg, 49%).

LCMS: 613 (M+H)<sup>+</sup>.

**Example 333**

4-{4-(2,4-Dichloro-phenyl)-2-[2-(4'-ethoxy-4-methoxy-biphenyl-3-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid

4-{4-(2,4-Dichloro-phenyl)-2-[2-(4'-ethoxy-4-methoxy-biphenyl-3-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid methyl ester (154 mg, 0.25 mmol) was hydrolyzed according to General Procedure F to give 4-{4-(2,4-Dichloro-phenyl)-2-[2-(4'-ethoxy-4-methoxy-biphenyl-3-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid (117 mg, 78%).

LCMS: 599 (M+H)<sup>+</sup>. <sup>1</sup>H NMR (DMSO, 400 MHz): δ 1.39 (t, 3H), 3.90 (s, 3H), 4.24 (q, 2H), 5.28 (d, 2H), 7.09 (d, 2H), 7.11-7.21 (m, 2H), 7.28-7.36 (m, 2H), 7.38 (d, 1H), 7.41-7.56 (m, 4H), 7.71 (d, 1H), 7.76-8.02 (m, 4H), 8.16 (d, 1H) ppm

**Example 334**

(4-{4-(2,4-Dichloro-phenyl)-2-[2-(3'-trifluoromethy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-phenyl)-acetic acid methyl ester

*Trans* 4-bromo cinnamic acid (227 mg, 1mmol) was reacted with 2-bromo-2,4-dichloro acetophenone (267 mg, 1 mmol) according to general procedure A and  
 5 obtained 2-[2-(4-bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (412 mg, 1 mmol) was N-alkylated with (4-Bromomethyl-phenyl)-acetic acid methyl ester (243 mg, 1 mmol) following general procedure E. The resulted {4-[2-[2-(4-Bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-phenyl}-acetic acid methyl ester (556 mg, 1 mmol) was coupled with 3-trifluoromethyl-phenyl boronic acid (189 mg, 1 mmol)  
 10 following General Procedure B to give (4-{4-(2,4-Dichloro-phenyl)-2-[2-(3'-trifluoromethy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-phenyl)-acetic acid methyl ester (321 mg, 51%).

LCMS: 621 (M+H)<sup>+</sup>

15 **Example 335**

(4-{4-(2,4-Dichloro-phenyl)-2-[2-(3'-trifluoromethy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-phenyl)-acetic acid

(4-{4-(2,4-Dichloro-phenyl)-2-[2-(3'-trifluoromethy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-phenyl)-acetic acid methyl ester (310 mg, 0.5 mmol) was  
 20 hydrolyzed according to General Procedure F to give (4-{4-(2,4-Dichloro-phenyl)-2-[2-(3'-trifluoromethy-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-phenyl)-acetic acid (198 mg, 65%).

LCMS: 607 (M+H)<sup>+</sup> <sup>1</sup>H NMR (DMSO, 400 MHz): δ 3.81 (s, 2H), 5.56 (s, 2H), 7.44-7.48 (m, 2H), 7.50-7.53 (m, 2H), 7.58 (s, 1H), 7.61-7.64 (m, 2H), 7.75-7.76 (m, 2H),  
 25 7.79-7.82 (m, 2H), 7.83-8.07 (m, 4H), 8.09 (d, 1H), 8.19 (s, 1H), 8.27 (d, 1H) ppm.

**Example 336**

4-{4-(2,4-Dichloro-phenyl)-2-[2-(4'-hydroxy-4-methoxy-biphenyl-3-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid methyl ester

*Trans* 5-bromo 2-methoxy cinnamic acid (257 mg, 1mmol) was reacted with 2-bromo-2,4- dichloro acetophenone (267 mg, 1 mmol) according to general procedure A and obtained 2-[2-(5-Bromo-2-methoxy-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (424 mg, 1 mmol) was N-alkylated with methyl 4 - (bromomethyl) benzoate (229 mg, 1 mmol) following general procedure E. The resulted 4-[2-[2-(5-Bromo-2-methoxy-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester (572 mg, 1 mmol) was coupled with 4-hydroxy- phenyl boronic acid (137 mg, 1 mmol) following General Procedure B to give 4-{4-(2,4-Dichloro-phenyl)-2-[2-(4'-hydroxy-4-methoxy-biphenyl-3-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid methyl ester (291 mg, 50%).

LCMS: 585 (M+H)<sup>+</sup>.

**Example 337**

4-{4-(2,4-Dichloro-phenyl)-2-[2-(4'-hydroxy-4-methoxy-biphenyl-3-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid

4-{4-(2,4-Dichloro-phenyl)-2-[2-(4'-hydroxy-4-methoxy-biphenyl-3-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid methyl ester (146 mg, 0.25 mmol) was hydrolyzed according to General Procedure F to give 4-{4-(2,4-Dichloro-phenyl)-2-[2-(4'-hydroxy-4-methoxy-biphenyl-3-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid (107 mg, 75%).

LCMS: 571 (M+H)<sup>+</sup>. <sup>1</sup>H NMR (DMSO, 400 MHz): δ, 3.87 (s, 3H), 5.26 (d, 2H), 7.13 (d, 2H), 7.16-7.22 (m, 2H), 7.28-7.36 (m, 2H), 7.39 (d, 1H), 7.41-7.56 (m, 4H), 7.70 (d, 1H), 7.76-8.11 (m, 4H), 8.14 (d, 1H) ppm

**Example 338**

4-[2-[2-(3'-Butoxy-biphenyl-4-yl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester

*Trans* 4-bromo cinnamic acid (227 mg, 1mmol) was reacted with 2-bromo-2,4-dichloro acetophenone (267 mg, 1 mmol) according to general procedure A and  
 5 obtained 2-[2-(4-bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (412 mg, 1 mmol) was N-alkylated with methyl 4 - (bromomethyl) benzoate (229 mg, 1 mmol) following general procedure E. The resulted 4-[2-[2-(4-bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-imidazol-1-yl-methyl]-benzoic acid methyl ester (542 mg, 1 mmol) was  
 10 coupled with 3-butoxy- phenyl boronic acid (195 mg, 1 mmol) following General Procedure B to give 4-2-[2-(3'-butoxy-biphenyl-4-yl)-(E)-vinyl]- 4-{4-(2,4-dichloro-phenyl)-imidazol-1-yl-methyl} benzoic acid methyl ester (325 mg, 53%).

LCMS: 611 (M+H)<sup>+</sup>

### Example 339

15 4-[2-[2-(3'-Butoxy-biphenyl-4-yl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid

4-2-[2-(3'-butoxy-biphenyl-4-yl)-(E)-vinyl]- 4-{4-(2,4-dichloro-phenyl)-imidazol-1-yl-methyl} benzoic acid methyl ester (305 mg, 0.5 mmol) was hydrolyzed according to General Procedure F to give 4-[2-[2-(3'-Butoxy-biphenyl-4-yl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid (192 mg, 64%)  
 20

LCMS: 597 (M+H)<sup>+</sup> <sup>1</sup>H NMR (DMSO, 400 MHz): δ 0.94 (t, 3H), 1.41-1.44 (m, 2H), 1.68-1.72 (m, 2H), 4.01 (q, 2H), 5.66 (s, 2H), 7.10 (d, 1H), 7.29 (s, 1H), 7.31-7.36 (m, 4H), 7.51-7.56 (m, 4H), 7.59-7.66 (m, 4H), 7.67 (d, 1H), 7.91 (d, 1H), 8.11 (s, 1H), 8.29 (d, 1H) ppm.

25

### Example 340

3-[2-[2-(4'-Butoxy-biphenyl-4-yl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester

*Trans* 4-bromo cinnamic acid (227 mg, 1mmol) was reacted with 2-bromo-2,4-dichloro acetophenone (267 mg, 1 mmol) according to general procedure A and  
 5 obtained 2-[2-(4-bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (412 mg, 1 mmol) was N-alkylated with methyl 3-(bromomethyl) benzoate (229 mg, 1 mmol) following general procedure E. The resulted 3-[2-[2-(4-bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-imidazol-1-yl-methyl]-benzoic acid methyl ester (542 mg, 1 mmol) was  
 10 coupled with 4-butoxy-phenyl boronic acid (195 mg, 1 mmol) following General Procedure B to give 3-2-[2-(4'-butoxy-biphenyl-4-yl)-(E)-vinyl]-4-[4-(2,4-dichloro-phenyl)-imidazol-1-yl-methyl] benzoic acid methyl ester (319 mg, 52%).

LCMS: 611 (M+H)<sup>+</sup>

### Example 341

15 3-[2-[2-(4'-Butoxy-biphenyl-4-yl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid

3-2-[2-(4'-butoxy-biphenyl-4-yl)-(E)-vinyl]-4-[4-(2,4-dichloro-phenyl)-imidazol-1-yl-methyl] benzoic acid methyl ester (305 mg, 0.5 mmol) was hydrolyzed according to General Procedure F to give 3-[2-[2-(4'-Butoxy-biphenyl-4-yl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid (191 mg, 64%)  
 20

LCMS: 597 (M+H)<sup>+</sup> <sup>1</sup>H NMR (DMSO, 400 MHz): δ 0.97 (t, 3H), 1.42-1.46 (m, 2H), 1.69-1.71 (m, 2H), 4.01 (q, 2H), 5.67 (s, 2H), 7.04 (d, 1H), 7.27 (s, 1H), 7.34-7.38 (m, 4H), 7.51-7.55 (m, 4H), 7.57-7.63 (m, 4H), 7.64 (d, 1H), 7.90 (d, 1H), 8.09 (s, 1H), 8.21 (d, 1H) ppm.

25

### Example 342

TTP 2002-08

4-{4-(2,4-Dichloro-phenyl)-2-[2-(4'-methanesulfonyl-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid methyl ester

*Trans* 4-bromo cinnamic acid (227 mg, 1mmol) was reacted with 2-bromo-2,4-dichloro acetophenone (267 mg, 1 mmol) according to general procedure A and  
 5 obtained 2-[2-(4-bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (412 mg, 1 mmol) was N-alkylated with methyl 4-(bromomethyl) benzoate (229 mg, 1 mmol) following general procedure E. The resulted 4-[2-[2-(4-bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)]-imidazol-1-yl-methyl-benzoic acid methyl ester (542 mg, 1 mmol) was  
 10 coupled with 4-(methanesulfonyl)-phenyl boronic acid (200 mg, 1 mmol) following General Procedure B to give 4-2-[2-(4'-methanesulfonyl-biphenyl-4-yl)-(E)-vinyl]-4-{4-(2,4-dichloro-phenyl)-imidazol-1-yl-methyl} benzoic acid methyl ester (294 mg, 47%)

LCMS: 617 (M+H)<sup>+</sup>.

### Example 343

15 4-{4-(2,4-Dichloro-phenyl)-2-[2-(4'-methanesulfonyl-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid

4-{4-(2,4-Dichloro-phenyl)-2-[2-(4'-methanesulfonyl-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid methyl ester (155 mg, 0.25 mmol) was hydrolyzed according to General Procedure F to give 4-{4-(2,4-Dichloro-phenyl)-2-[2-(4'-  
 20 methanesulfonyl-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid (108 mg, 72%)

LCMS: 603 (M+H)<sup>+</sup> <sup>1</sup>H NMR (DMSO, 400 MHz): δ 3.47 (s, 3H), 5.66 (s, 2H), 7.12 (d, 1H), 7.36 (s, 1H), 7.37-7.40 (m, 4H), 7.52-7.54 (m, 4H), 7.58-7.64 (m, 4H), 7.66 (d, 1H), 7.91 (d, 1H), 8.09 (s, 1H), 8.21 (d, 1H) ppm.

25

### Example 344

4-{4-(2,4-Dichloro-phenyl)-2-[2-(3'-methanesulfonyl-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid methyl ester

*Trans* 4-bromo cinnamic acid (227 mg, 1mmol) was reacted with 2-bromo-2,4-dichloro acetophenone (267 mg, 1 mmol) according to general procedure A and  
 5 obtained 2-[2-(4-bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl))-1H-imidazole (412 mg, 1 mmol) was N-alkylated with methyl 4 - (bromomethyl) benzoate (229 mg, 1 mmol) following general procedure E. The resulted 4-[2-[2-(4-bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl))-imidazol-1yl-methyl]-benzoic acid methyl ester (542 mg, 1 mmol) was  
 10 coupled with 3-(methanesulfonyl)- phenyl boronic acid (200 mg, 1 mmol) following General Procedure B to give 4-2-[2-(3'- methanesulfonyl -biphenyl-4-yl)-(E)-vinyl]- 4-{4-(2,4-dichloro-phenyl)-imidazol-1yl-methyl} benzoic acid methyl ester (299 mg, 48%)

LCMS: 617 (M+H)<sup>+</sup>.

### Example 345

15 4-{4-(2,4-Dichloro-phenyl)-2-[2-(3'-methanesulfonyl-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid

4-{4-(2,4-Dichloro-phenyl)-2-[2-(3'-methanesulfonyl-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid methyl ester (155 mg, 0.25 mmol) was hydrolyzed according to General Procedure F to give 4-{4-(2,4-Dichloro-phenyl)-2-[2-(3'-  
 20 methanesulfonyl-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid (101 mg, 67%)

LCMS: 603 (M+H)<sup>+</sup> <sup>1</sup>H NMR (DMSO, 400 MHz): δ 3.31 (s, 3H), 5.51 (s, 2H), 7.23 (s, 1H), 7.45-7.49 (m, 2H), 7.51-7.57 (m, 2H), 7.61-7.64 (m, 2H), 7.75-7.76 (m, 2H), 7.79-7.82 (m, 2H), 7.84-8.07 (m, 4H), 8.10 (d, 1H), 8.19 (s, 1H), 8.25 (d, 1H) ppm.

25

### Example 346



2-(4-{2-[4-(2,4-Dichloro-phenyl)-1-(4-methoxycarbonyl-benzyl)-1H-imidazol-2-yl]-(E)-vinyl}-phenyl)-pyrrole-1-carboxylic acid tert-butyl ester

- Trans* 4-bromo cinnamic acid (227 mg, 1mmol) was reacted with 2-bromo-2,4-dichloro acetophenone (267 mg, 1 mmol) according to general procedure A and  
 5 obtained 2-[2-(4-bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl))-1H-imidazole (412 mg, 1 mmol) was N-alkylated with methyl -4 - (bromomethyl) benzoate (229 mg, 1 mmol) following general procedure E. The resulted 4-[2-[2-(4-bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl))-imidazol-1-yl-methyl]-benzoic acid methyl ester (542 mg, 1 mmol) was  
 10 coupled with 1-(*tert*-butoxycarbonyl)-pyrrole-2-boronic acid (211 mg, 1 mmol) following General Procedure B to give 2-(4-{2-[4-(2,4-Dichloro-phenyl)-1-(4-methoxycarbonyl-benzyl)-1H-imidazol-2-yl]-(E)-vinyl}-phenyl)-pyrrole-1-carboxylic acid tert-butyl ester (278 mg, 44%)

LCMS: 628 (M+H)<sup>+</sup>.

15 **Example 347**

2-(4-{2-[1-(4-Carboxy-benzyl)-4-(2,4-dichloro-phenyl)-1H-imidazol-2-yl]-(E)-vinyl}-phenyl)-pyrrole-1-carboxylic acid tert-butyl ester

- 2-(4-{2-[4-(2,4-Dichloro-phenyl)-1-(4-methoxycarbonyl-benzyl)-1H-imidazol-2-yl]-(E)-vinyl}-phenyl)-pyrrole-1-carboxylic acid tert-butyl ester (157 mg, 0.25 mmol) was  
 20 hydrolyzed according to General Procedure F to give 2-(4-{2-[1-(4-Carboxy-benzyl)-4-(2,4-dichloro-phenyl)-1H-imidazol-2-yl]-(E)-vinyl}-phenyl)-pyrrole-1-carboxylic acid tert-butyl ester (89 mg, 59%)

LCMS: 614 (M+H)<sup>+</sup>.

25 **Example 348**

4-(4-(2,4-Dichloro-phenyl)-2-{2-[4-(1H-pyrrol-2-yl)-phenyl]-(E)-vinyl}-imidazol-1-ylmethyl)-benzoic acid

2-(4-{2-[1-(4-Carboxy-benzyl)-4-(2,4-dichloro-phenyl)-1H-imidazol-2-yl]-(E)-vinyl}-phenyl)-pyrrole-1-carboxylic acid tert-butyl ester (62 mg, 0.1 mmol) was de-protected according to General Procedure O to give 4-(4-(2,4-Dichloro-phenyl)-2-{2-[4-(1H-pyrrol-2-yl)-phenyl]-(E)-vinyl}-imidazol-1-ylmethyl)-benzoic acid (29 mg, 55%).

5 LCMS: 514 (M+H)<sup>+</sup>.

### Example 349

4-[2-{2-[4'-(4-Nitro-phenoxy)-biphenyl-4-yl]-(E)-vinyl}-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester

10 *Trans* 4-bromo cinnamic acid (227 mg, 1mmol) was reacted with 2-bromo-2,4-dichloro acetophenone (267 mg, 1 mmol) according to general procedure A and obtained 2-[2-(4-bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (412 mg, 1 mmol) was N-alkylated with methyl 4-(bromomethyl) benzoate (229 mg, 1 mmol) following general procedure E. The resulted 4-[2-[2-(4-bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-imidazol-1-yl-methyl]-benzoic acid methyl ester (542 mg, 1 mmol) was  
15 coupled with 4-hydroxy-phenyl boronic acid (137 mg, 1 mmol) following General Procedure B and obtained 4-2-[2-(4'-hydroxy-biphenyl-4-yl)-(E)-vinyl]-4-[4-(2,4-dichloro-phenyl)-imidazol-1-yl-methyl] benzoic acid methyl ester (278 mg, 0.5 mmol) was alkylated with 4-fluoronitro benzene (71 mg, 0.5 mmol) according to general procedure I  
20 to give 4-[2-[2-[4'-(4-Nitro-phenoxy)-biphenyl-4-yl]-(E)-vinyl]-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester (221 mg, 65%).

LCMS: 676 (M+H)<sup>+</sup>.

### Example 350

25 4-[2-{2-[4'-(4-Nitro-phenoxy)-biphenyl-4-yl]-(E)-vinyl}-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid

4-[2-{2-[4'-(4-Nitro-phenoxy)-biphenyl-4-yl]-(E)-vinyl}-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester (169 mg, 0.25 mmol) was hydrolyzed according to General Procedure F to give 4-[2-{2-[4'-(4-Nitro-phenoxy)-biphenyl-4-yl]-(E)-vinyl}-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid (125 mg, 75%).

5 LCMS: 662 (M+H)<sup>+</sup>.

### Example 351

4-[2-{2-[4'-(4-Amino-phenoxy)-biphenyl-4-yl]-(E)-vinyl}-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester

10 4-[2-{2-[4'-(4-Nitro-phenoxy)-biphenyl-4-yl]-(E)-vinyl}-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester (169 mg, 0.25 mmol) was reduced according to general procedure K to give 4-[2-{2-[4'-(4-amino-phenoxy)-biphenyl-4-yl]-(E)-vinyl}-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester (112 mg, 69%).

15 LCMS: 646 (M+H)<sup>+</sup>.

### Example 352

4-(4-(2,4-Dichloro-phenyl)-2-{2-[4'-(4-methanesulfonylamino-phenoxy)-biphenyl-4-yl]-(E)-vinyl}-imidazol-1-ylmethyl)-benzoic acid methyl ester

20 4-[2-{2-[4'-(4-amino-phenoxy)-biphenyl-4-yl]-(E)-vinyl}-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid methyl ester (65 mg, 0.1 mmol) was coupled with methanesulfonyl chloride (12 mg, 0.1 mmol) following general procedure L to give 4-(4-(2,4-Dichloro-phenyl)-2-{2-[4'-(4-methanesulfonylamino-phenoxy)-biphenyl-4-yl]-(E)-vinyl}-imidazol-1-ylmethyl)-benzoic acid methyl ester (41 mg, 57%).

25 LCMS: 724 (M+H)<sup>+</sup>.

**Example 353**

4-(4-(2,4-Dichloro-phenyl)-2-{2-[4'-(4-methanesulfonylamino-phenoxy)-biphenyl-4-yl]-(E)-vinyl}-imidazol-1-ylmethyl)-benzoic acid

4-(4-(2,4-Dichloro-phenyl)-2-{2-[4'-(4-methanesulfonylamino-phenoxy)-biphenyl-4-yl]-(E)-vinyl}-imidazol-1-ylmethyl)-benzoic acid methyl ester (36 mg, 0.05 mmol) was hydrolyzed according to General Procedure F to give 4-(4-(2,4-Dichloro-phenyl)-2-{2-[4'-(4-methanesulfonylamino-phenoxy)-biphenyl-4-yl]-(E)-vinyl}-imidazol-1-ylmethyl)-benzoic acid (20 mg, 64%).

LCMS: 710 (M+H)<sup>+</sup>

**Example 354**

4-{4-(2,4-Dichloro-phenyl)-2-[2-(3'-methanesulfonylamino-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid methyl ester

*Trans* 4-bromo cinnamic acid (227 mg, 1mmol) was reacted with 2-bromo-2,4-dichloro acetophenone (267 mg, 1 mmol) according to general procedure A and obtained 2-[2-(4-bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (412 mg, 1 mmol) was N-alkylated with methyl 4-(bromomethyl) benzoate (229 mg, 1 mmol) following general procedure E. The resulted 4-[2-[2-(4-bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)]-imidazol-1-yl-methyl]-benzoic acid methyl ester (542 mg, 1 mmol) was coupled with 3-(methanesulfonylamino)-phenyl boronic acid (215 mg, 1 mmol) following General Procedure B to give 4-2-[2-(3'-methanesulfonylamino -biphenyl-4-yl)-(E)-vinyl]-4-{4-(2,4-dichloro-phenyl)-imidazol-1-yl-methyl} benzoic acid methyl ester (304 mg, 48%)

LCMS: 632 (M+H)<sup>+</sup>.

**Example 355**

4-{4-(2,4-Dichloro-phenyl)-2-[2-(3'-methanesulfonylamino -biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid

4-{4-(2,4-Dichloro-phenyl)-2-[2-(3'-methanesulfonylamino -biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid methyl ester (158 mg, 0.25 mmol) was hydrolyzed according to General Procedure F to give 4-{4-(2,4-Dichloro-phenyl)-2-[2-(3'-methane-sulfonylamino -biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid (109 mg, 70%)

LCMS: 618 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (DMSO, 400 MHz): δ 3.38 (s, 3H), 5.64 (s, 2H), 7.21 (d, 1H), 7.33-7.42 (m, 4H), 7.43-7.52 (m, 4H), 7.56-7.75 (m, 4H), 7.77 (d, 1H), 7.92 (d, 1H), 8.11 (s, 1H), 8.27 (d, 1H), 9.85 (s, 1H), 13.02 (s, 1H) ppm.

#### 10 Example 356

4-{4-(2,4-Dichloro-phenyl)-2-[2-(4'-methanesulfonylamino-biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid methyl ester

*Trans* 4-bromo cinnamic acid (227 mg, 1mmol) was reacted with 2-bromo-2,4-dichloro acetophenone (267 mg, 1 mmol) according to general procedure A and obtained 2-[2-(4-bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (412 mg, 1 mmol) was N-alkylated with methyl 4 - (bromomethyl) benzoate (229 mg, 1 mmol) following general procedure E. The resulted 4-[2-[2-(4-bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)]-imidazol-1yl-methyl]-benzoic acid methyl ester (542 mg, 1 mmol) was coupled with 4-(methanesulfonylamino)- phenyl boronic acid (215 mg, 1 mmol) following General Procedure B to give 4-2-[2-(4'-methanesulfonylamino -biphenyl-4-yl)-(E)-vinyl]-4-{4-(2,4-dichloro-phenyl)-imidazol-1yl-methyl} benzoic acid methyl ester (308 mg, 48%)

LCMS: 632 (M+H)<sup>+</sup>

#### Example 357

4-{4-(2,4-Dichloro-phenyl)-2-[2-(4'-methanesulfonylamino -biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid

TTP 2002-08

4-{4-(2,4-Dichloro-phenyl)-2-[2-(4'-methanesulfonylamino -biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid methyl ester (158 mg, 0.25 mmol) was hydrolyzed according to General Procedure F to give 4-{4-(2,4-Dichloro-phenyl)-2-[2-(4'-methanesulfonylamino -biphenyl-4-yl)-(E)-vinyl]-imidazol-1-ylmethyl}-benzoic acid (101 mg, 66%)

LCMS: 618 (M+H)<sup>+</sup> <sup>1</sup>H NMR (DMSO, 400 MHz): δ 3.47 (s, 3H), 5.64 (s, 2H), 6.70 (d, 2H), 7.01 (d, 2H), 7.28-7.30 (m, 2H), 7.35-7.37 (m, 2H), 7.51-7.59 (m, 2H), 7.65-7.72 (m, 2H), 7.74 (d, 1H), 7.93 (s, 1H), 8.11 (s, 1H), 8.27 (d, 1H), 9.18 (s, 1H), 9.37 (s, 1H), 13.01 (s, 1H) ppm.

### Example 358

4'-[2-[4-(2,4-Dichloro-phenyl)-1-(4-methoxycarbonyl-benzyl)-1H-imidazol-2-yl]-(E)-vinyl]-biphenyl-3-carboxylic acid methyl ester

*Trans* 4-bromo cinnamic acid (227 mg, 1mmol) was reacted with 2-bromo-2,4-dichloro acetophenone (267 mg, 1 mmol) according to general procedure A and obtained 2-[2-(4-bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (412 mg, 1 mmol) was N-alkylated with methyl 4 - (bromomethyl) benzoate (229 mg, 1 mmol) following general procedure E. The resulted 4-[2-[2-(4-bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)]-imidazol-1-yl-methyl]-benzoic acid methyl ester (542 mg, 1 mmol) was coupled with 3-(methoxycarbonyl)- phenyl boronic acid (179 mg, 1 mmol) following General Procedure B to give 4'-[2-[4-(2,4-Dichloro-phenyl)-1-(4-methoxycarbonyl-benzyl)-1H-imidazol-2-yl]-(E)-vinyl]-biphenyl-3-carboxylic acid methyl ester (289 mg, 48%)

LCMS: 597 (M+H)<sup>+</sup>.

### Example 359

4'-[2-[4-(2,4-Dichloro-phenyl)-1-(4-methoxycarbonyl-benzyl)-1H-imidazol-2-yl]-(E)-vinyl]-biphenyl-3-carboxylic acid

4'-{2-[4-(2,4-Dichloro-phenyl)-1-(4-methoxycarbonyl-benzyl)-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-3-carboxylic acid methyl ester (149 mg, 0.25 mmol) was hydrolyzed according to General Procedure F to give 4'-{2-[4-(2,4-Dichloro-phenyl)-1-(4-methoxycarbonyl-benzyl)-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-3-carboxylic acid (99 mg, 69%)

LCMS: 569 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (DMSO, 400 MHz): δ 5.70 (s, 2H), 7.39-7.45 (m, 4H), 7.54 (d, 1H), 7.61 (d, 1H), 7.70-7.74 (m, 4H), 7.76 (d, 1H), 7.79-7.96 (m, 4H), 7.98 (s, 1H), 8.17 (d, 1H), 8.22 (d, 1H) ppm.

#### 10 Example 360

4-(4-(2,4-Dichloro-phenyl)-2-{2-[4'-(4,4,4-trifluoro-butoxy)-biphenyl-4-yl]-(E)-vinyl}-imidazol-1-ylmethyl)-benzoic acid methyl ester

*Trans* 4-bromo cinnamic acid (227 mg, 1mmol) was reacted with 2-bromo-2,4-dichloro acetophenone (267 mg, 1 mmol) according to general procedure A and obtained 2-[2-(4-bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (412 mg, 1 mmol) was N-alkylated with methyl 4-(bromomethyl) benzoate (229 mg, 1 mmol) following general procedure E. The resulted 4-[2-[2-(4-bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)]-imidazol-1-yl-methyl-benzoic acid methyl ester (542 mg, 1 mmol) was coupled with 4-hydroxy-phenyl boronic acid (137 mg, 1 mmol) following General Procedure B and obtained 4-2-[2-(4'-hydroxy-biphenyl-4-yl)-(E)-vinyl]-4-{4-(2,4-dichloro-phenyl)-imidazol-1-yl-methyl} benzoic acid methyl ester (277 mg, 0.5 mmol) was alkylated with 1-bromo-4,4,4-trifluorobutane following general procedure E to give 4-(4-(2,4-Dichloro-phenyl)-2-{2-[4'-(4,4,4-trifluoro-butoxy)-biphenyl-4-yl]-(E)-vinyl}-imidazol-1-ylmethyl)-benzoic acid methyl ester (214 mg, 64%).

LCMS: 665 (M+H)<sup>+</sup>.

#### Example 361

4-(4-(2,4-Dichloro-phenyl)-2-{2-[4'-(4,4,4-trifluoro-butoxy)-biphenyl-4-yl]-(E)-vinyl}-imidazol-1-ylmethyl)-benzoic acid

4-(4-(2,4-Dichloro-phenyl)-2-{2-[4'-(4,4,4-trifluoro-butoxy)-biphenyl-4-yl]-(E)-vinyl}-imidazol-1-ylmethyl)-benzoic acid methyl ester (166 mg, 0.25 mmol) was hydrolyzed according to General Procedure F to give 4-(4-(2,4-Dichloro-phenyl)-2-{2-[4'-(4,4,4-trifluoro-butoxy)-biphenyl-4-yl]-(E)-vinyl}-imidazol-1-ylmethyl)-benzoic acid (106 mg, 65%)

LCMS: 651 (M+H)<sup>+</sup> <sup>1</sup>H NMR (DMSO, 400 MHz): δ 1.41-1.44 (m, 2H), 1.66-1.71 (m, 2H), 2.41-2.47 (m, 2H), 5.66 (s, 2H), 7.12 (d, 1H), 7.19 (s, 1H), 7.33-7.37 (m, 4H), 7.51-7.55 (m, 4H), 7.56-7.62 (m, 4H), 7.65 (d, 1H), 7.91 (d, 1H), 8.11(s, 1H), 8.29 (d, 1H) ppm.

### Example 362

4-(4-(2,4-Dichloro-phenyl)-2-{2-[4-(6-methoxy-pyridin-3-yl)-phenyl]-(E)-vinyl}-imidazol-1-ylmethyl)-benzoic acid methyl ester

*Trans*-4-bromo cinnamic acid (227 mg, 1mmol) was reacted with 2-bromo-2,4-dichloro acetophenone (267 mg, 1 mmol) according to general procedure A and obtained 2-[2-(4-bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (412 mg, 1 mmol) was N-alkylated with methyl 4-(bromomethyl) benzoate (229 mg, 1 mmol) following general procedure E. The resulted 4-[2-[2-(4-bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)]-imidazol-1-yl-methyl]-benzoic acid methyl ester (542 mg, 1 mmol) was coupled with 2-methoxy-5-pyridine boronic acid (153 mg, 1 mmol) following General Procedure B to give 4-(4-(2,4-Dichloro-phenyl)-2-{2-[4-(6-methoxy-pyridin-3-yl)-phenyl]-(E)-vinyl}-imidazol-1-ylmethyl)-benzoic acid methyl ester (289 mg, 50%)

LCMS: 570 (M+H)<sup>+</sup>

### Example 363



4-(4-(2,4-Dichloro-phenyl)-2-{2-[4-(6-methoxy-pyridin-3-yl)-phenyl]-(E)-vinyl}-imidazol-1-ylmethyl)-benzoic acid

4-(4-(2,4-Dichloro-phenyl)-2-{2-[4-(6-methoxy-pyridin-3-yl)-phenyl]-(E)-vinyl}-imidazol-1-ylmethyl)-benzoic acid methyl ester (143 mg, 0.25 mmol) was hydrolyzed according to General Procedure F to give 4-(4-(2,4-Dichloro-phenyl)-2-{2-[4-(6-methoxy-pyridin-3-yl)-phenyl]-(E)-vinyl}-imidazol-1-ylmethyl)-benzoic acid (95 mg, 68%)

LCMS: 556 (M+H)<sup>+</sup> <sup>1</sup>H NMR (DMSO, 400 MHz): δ 3.79 (s, 3H), 5.68 (s, 2H), 7.01 (d, 1H), 7.26 (s, 1H), 7.36-7.40 (m, 3H), 7.51-7.56 (m, 3H), 7.58-7.64 (m, 4H), 7.67 (d, 1H), 7.92 (d, 1H), 8.11 (s, 1H), 8.27 (d, 1H) ppm.

**Example 364**

2-[2-(4'-Butoxy-biphenyl-4-yl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1-(4-trifluoromethoxy-benzyl)-1H-imidazole

*Trans* 4-bromo cinnamic acid (227 mg, 1mmol) was reacted with 2-bromo-2,4-dichloro acetophenone (267 mg, 1 mmol) according to general procedure A and obtained 2-[2-(4-bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (412 mg, 1 mmol) was N-alkylated with 4-(trifluoromethoxy)-benzyl bromide (255 mg, 1 mmol) following general procedure E. The resulted 2-[2-(4-Bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1-(4-trifluoromethoxy-benzyl)-1H-imidazole (284 mg, 0.5 mmol) was coupled with 4-butoxy- phenyl boronic acid (98 mg, 0.5 mmol) following General Procedure B to give 2-[2-(4'-Butoxy-biphenyl-4-yl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1-(4-trifluoromethoxy-benzyl)-1H-imidazole (155 mg, 48%).

LCMS: 637 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (DMSO, 400 MHz): δ 0.92 (t, 3H), 1.43-1.47 (m, 2H), 1.69-1.72 (m, 2H), 4.02 (q, 1H), 5.59 (s, 2H), 7.02 (d, 2H), 7.34 (s, 1H), 7.39-7.42 (m, 4H), 7.50 (d, 1H), 7.51 (d, 1H), 7.52 (d, 1H), 7.55-7.65 (m, 4H), 7.72 (d, 2H), 8.10 (s, 1H), 8.26 (d, 1H) ppm.

**Example 365**

4-(4'-{2-[4-(2,4-Dichloro-phenyl)-1-(4-trifluoromethoxy-benzyl)-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-butyric acid methyl ester

*Trans* 4-bromo cinnamic acid (227 mg, 1mmol) was reacted with 2-bromo-2,4-dichloro acetophenone (267 mg, 1 mmol) according to general procedure A and  
 5 obtained 2-[2-(4-bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (412 mg, 1 mmol) was N-alkylated with 4-(trifluoromethoxy)-benzyl bromide (255 mg, 1 mmol) following general procedure E. The resulted 2-[2-(4-Bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1-(4-trifluoromethoxy-benzyl)-1H-imidazole (284 mg, 0.5 mmol) was  
 10 coupled with 4-hydroxy- phenyl boronic acid (69 mg, 0.5 mmol) following General Procedure B and obtained 2-[2-(4'-hydroxy-biphenyl-4-yl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1-(4-trifluoromethoxy-benzyl)-1H-imidazole (145 mg, 0.25 mol) was alkylated with 4-bromobutyric acid methyl ester (45 mg, 0.25 mmol) following general procedure E to give 4-(4'-{2-[4-(2,4-Dichloro-phenyl)-1-(4-trifluoromethoxy-benzyl)-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-butyric acid methyl ester (115 mg, 67%).

15 LCMS: 681 (M+H)<sup>+</sup>

**Example 366**

4-(4'-{2-[4-(2,4-Dichloro-phenyl)-1-(4-trifluoromethoxy-benzyl)-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-butyric acid

20 4-(4'-{2-[4-(2,4-Dichloro-phenyl)-1-(4-trifluoromethoxy-benzyl)-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-butyric acid methyl ester (69 mg, 0.1 mmol) was hydrolyzed according to General Procedure F to give 4-(4'-{2-[4-(2,4-Dichloro-phenyl)-1-(4-trifluoromethoxy-benzyl)-1H-imidazol-2-yl]-(E)-vinyl}-biphenyl-4-yloxy)-butyric acid (46 mg, 68%)

25 LCMS: 667 (M+H)<sup>+</sup><sup>1</sup>H NMR (DMSO, 400 MHz):  $\delta$  1.97 (m, 2H), 2.38 (m, 2H), 4.03 (m, 2H), 5.61 (s, 2H), 7.01 (d, 2H), 7.35 (d, 1H), 7.40-7.44 (m, 4H), 7.52 (d, 1H), 7.60-7.67 (m, 6H), 7.74 (d, 2H), 8.14 (s, 1H), 8.23 (d, 1H) ppm.

**Exempl 367**4-(2,4-Dichloro-phenyl)-1-(4-methanesulfonyl-benzyl)-2-[2-(3'-trifluoromethyl-biphenyl-4-yl)-(E)-vinyl]-1H-imidazole

5 *Trans* 4-bromo cinnamic acid (227 mg, 1mmol) was reacted with 2-bromo-2,4-dichloro acetophenone (267 mg, 1 mmol) according to general procedure A and obtained 2-[2-(4-bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (412 mg, 1 mmol) was N-alkylated with 4-(methanesulfonyl)-benzyl bromide (249 mg, 1 mmol) following general procedure E. The resulted 2-[2-(4-Bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1-(4-methanesulfonyl-benzyl)-1H-imidazole (281 mg, 0.5 mmol) was  
 10 coupled with 3-(trifluoromethyl)- phenyl boronic acid (95 mg, 0.5 mmol) following General Procedure B to give 4-(2,4-Dichloro-phenyl)-1-(4-methanesulfonyl-benzyl)-2-[2-(3'-trifluoromethyl-biphenyl-4-yl)-(E)-vinyl]-1H-imidazole (155 mg, 49%).

LCMS: 627 (M+H)<sup>+</sup> <sup>1</sup>H NMR (DMSO, 400 MHz):  $\delta$  3.35 (s, 3H), 5.71 (s, 2H), 7.41 (s, 1H), 7.45 (s, 1H), 7.51-7.77 (m, 6H), 7.79-7.93 (m, 4H), 7.95-8.12 (m, 4H), 8.28 (d,  
 15 1H), 8.39 (s, 1H) ppm.

**Example 368**4-(2,4-Dichloro-phenyl)-1-(4-methanesulfonyl-benzyl)-2-[2-(3'-methanesulfonylbiphenyl-4-yl)-(E)-vinyl]-1H-imidazole

20 *Trans* 4-bromo cinnamic acid (227 mg, 1mmol) was reacted with 2-bromo-2,4-dichloro acetophenone (267 mg, 1 mmol) according to general procedure A and obtained 2-[2-(4-bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1H-imidazole (412 mg, 1 mmol) was N-alkylated with 4-(methanesulfonyl)-benzyl bromide (249 mg, 1 mmol) following general procedure E. The resulted 2-[2-(4-Bromo-phenyl)-(E)-vinyl]-4-(2,4-dichloro-phenyl)-1-(4-methanesulfonyl-benzyl)-1H-imidazole (281 mg, 0.5 mmol) was  
 25 coupled with 3-(methanesulfonyl)- phenyl boronic acid (100 mg, 0.5 mmol) following General Procedure B to give 4-(2,4-Dichloro-phenyl)-1-(4-methanesulfonyl-benzyl)-2-[2-(3'-methanesulfonyl -biphenyl-4-yl)-(E)-vinyl]-1H-imidazole (165 mg, 52%).

LCMS: 637 (M+H)<sup>+</sup> <sup>1</sup>H NMR (DMSO, 400 MHz): δ 3.31 (s, 3H), 3.34 (s, 3H), 5.71 (s, 2H), 7.41 (s, 1H), 7.46 (s, 1H), 7.51 (d, 1H), 7.52 (d, 1H), 7.53 (s, 1H), 7.65-7.81 (m, 4H), 7.83-7.85 (m, 4H), 7.93 (d, 1H), 7.95 (s, 1H), 8.15 (d, 1H), 8.19 (d, 1H), 8.28 (d, 1H) ppm.

5

**Example 369**4-[4-(2,4-Dichloro-phenyl)-2-(4'-hydroxy-biphenyl-4-yl)-imidazol-1-ylmethyl]-benzoic acid methyl ester

4-Hydroxy-4-biphenyl carboxylic acid (214 mg, 1mmol) was reacted with 2-bromo-2,4-dichloro acetophenone (267 mg, 1 mmol) according to general procedure A and obtained 4'-[4-(2,4-Dichloro-phenyl)-1H-imidazol-2-yl]-biphenyl-4-ol (381 mg, 1 mmol) was N-alkylated with methyl 4-(bromomethyl) benzoate (229 mg, 1 mmol) following general procedure E to give 4-[4-(2,4-Dichloro-phenyl)-2-(4'-hydroxy-biphenyl-4-yl)-imidazol-1-ylmethyl]-benzoic acid methyl ester (312 mg, 59%).

15 LCMS: 529 (M+H)<sup>+</sup>.

**Example 370**4-[4-(2,4-Dichloro-phenyl)-2-(4'-hydroxy-biphenyl-4-yl)-imidazol-1-ylmethyl]-benzoic acid

4-[4-(2,4-Dichloro-phenyl)-2-(4'-hydroxy-biphenyl-4-yl)-imidazol-1-ylmethyl]-benzoic acid methyl ester (264 mg, 0.5 mmol) was hydrolyzed according to General Procedure F to give 4-[4-(2,4-Dichloro-phenyl)-2-(4'-hydroxy-biphenyl-4-yl)-imidazol-1-ylmethyl]-benzoic acid (186 mg, 72%).

20 LCMS: 515 (M+H)<sup>+</sup> <sup>1</sup>H NMR (DMSO, 400 MHz): δ 5.54 (s, 2H), 6.81-6.86 (m, 5H), 7.23 (d, 1H), 7.41-7.57 (m, 5H), 7.74 (d, 1H), 7.89 (d, 1H), 7.94 (d, 1H), 8.11 (s, 1H), 8.27 (d, 1H) ppm.

25

**Exempl 371**4-[4-(2,4-Dichloro-phenyl)-2-(4'-ethoxy-biphenyl-4-yl)-imidazol-1-ylmethyl]-benzoic acid methyl ester

4-Hydroxy-4-biphenyl carboxylic acid (214 mg, 1mmol) was reacted with 2-bromo-2,4-dichloro acetophenone (267 mg, 1 mmol) according to general procedure A and obtained 4'-[4-(2,4-Dichloro-phenyl)-1H-imidazol-2-yl]-biphenyl-4-ol (381 mg, 1 mmol) was N-alkylated with methyl 4-(bromomethyl) benzoate (229 mg, 1 mmol) following general procedure E. The resulted 4-[4-(2,4-Dichloro-phenyl)-2-(4'-hydroxy-biphenyl-4-yl)-imidazol-1-ylmethyl]-benzoic acid methyl ester (265 mg, 0.5mmol) was alkylated with bromo ethane (55 mg, 0.5 mmol) following general procedure E to give 4-[4-(2,4-Dichloro-phenyl)-2-(4'-ethoxy-biphenyl-4-yl)-imidazol-1-ylmethyl]-benzoic acid methyl ester (191 mg, 68%).

LCMS: 557 (M+H)<sup>+</sup>.

**Example 372**4-[4-(2,4-Dichloro-phenyl)-2-(4'-ethoxy-biphenyl-4-yl)-imidazol-1-ylmethyl]-benzoic acid

4-[4-(2,4-Dichloro-phenyl)-2-(4'-ethoxy-biphenyl-4-yl)-imidazol-1-ylmethyl]-benzoic acid methyl ester (278 mg, 0.5 mmol) was hydrolyzed according to General Procedure F to give 4-[4-(2,4-Dichloro-phenyl)-2-(4'-ethoxy-biphenyl-4-yl)-imidazol-1-ylmethyl]-benzoic acid (189 mg, 69%).

LCMS: 543 (M+H)<sup>+</sup>; <sup>1</sup>H NMR (DMSO, 400 MHz): δ 0.94 (t, 3H), 4.07 (q, 2H), 5.56 (s, 2H), 6.83-6.88 (m, 4H), 7.21 (d, 1H), 7.43-7.58 (m, 4H), 7.65-7.69 (m, 2H), 7.71 (d, 1H), 7.90 (d, 1H), 7.94 (d, 1H), 8.12 (s, 1H), 8.28 (d, 1H) ppm.

**Example 373**4-[4-(2,4-Dichloro-phenyl)-2-(3'-methanesulfonyl-biphenyl-4-yl)-imidazol-1-ylmethyl]-benzoic acid methyl ester

4-Bromo benzoic acid (201 mg, 1mmol) was reacted with 2-bromo-2,4- dichloro acetophenone (267 mg, 1 mmol) according to general procedure A and obtained 2-(4-bromo-phenyl)-4-(2,4-dichloro-phenyl)-1H-imidazole (368 mg, 1 mmol) was N-alkylated with methyl -4 - (bromomethyl) benzoate (229 mg, 1 mmol) following general procedure

5 E. The resulted 4-[2-(4-Bromo-phenyl)-4-(2,4-dichloro-phenyl)-imidazol-1-ylmethyl]-benzoic acid methylester (516 mg, 1 mmol) was coupled with 3-(methanesulfonyl)-phenyl boronic acid (200 mg, 1 mmol) following General Procedure B to give 4-[4-(2,4-Dichloro-phenyl)-2-(3'-methanesulfonyl-biphenyl-4-yl)-imidazol-1-ylmethyl]-benzoic acid methyl ester (324 mg, 55%).

10 LCMS: 591 (M+H)<sup>+</sup>

#### Example 374

4-[4-(2,4-Dichloro-phenyl)-2-(3'-methanesulfonyl-biphenyl-4-yl)-imidazol-1-ylmethyl]-benzoic acid

15 4-[4-(2,4-Dichloro-phenyl)-2-(3'-methanesulfonyl-biphenyl-4-yl)-imidazol-1-ylmethyl]-benzoic acid methyl ester (295 mg, 0.5 mmol) was hydrolyzed according to General Procedure F to give 4-[4-(2,4-Dichloro-phenyl)-2-(3'-methanesulfonyl-biphenyl-4-yl)-imidazol-1-ylmethyl]-benzoic acid (201 mg, 69%).

LCMS: 577 (M+H)<sup>+</sup> <sup>1</sup>H NMR (DMSO, 400 MHz): δ 3.31 (s, 3H), 5.64 (s, 2H),

20 7.25-7.33 (m, 4H), 7.60 (d, 1H), 7.76 (s, 1H), 7.82 (d, 1H), 7.84 (d, 1H), 7.90-7.96 (m, 4H), 8.10 (d, 1H), 8.18 (d, 1H), 8.23 (s, 1H), 8.30 (s, 1H) ppm.

#### Example 375

4-{4-(2,4-Dichloro-phenyl)-2-[2-(4'-trifluoromethyl-biphenyl-4-yl)-ethyl]-imidazol-1-ylmethyl}-benzoic acid

25

4-{4-(2,4-dichloro-phenyl)-2-[2-(4'-trifluoromethyl-biphenyl-4-yl)-(E)-vinyl]-imidazol-1yl-methyl} benzoic acid (148 mg, 0.25 mmol) was reduced according to

General Procedure V to give 4-{4-(2,4-Dichloro-phenyl)-2-[2-(4'-trifluoromethyl-biphenyl-4-yl)-ethyl]-imidazol-1-ylmethyl}-benzoic acid (79 mg, 53%).

LCMS: 595 (M+H)<sup>+</sup> <sup>1</sup>H NMR (DMSO, 400 MHz):  $\delta$  2.92-2.94 (m, 2H), 2.98-3.0 (m, 2H), 5.64 (d, 2H), 7.20 (d, 1H), 7.31-7.38 (m, 2H), 7.42-7.52 (m, 2H), 7.58-7.65 (m, 2H), 7.75-7.79 (m, 2H), 7.80-7.95 (m, 4H), 8.11 (s, 1H), 8.22 (d, 1H), 8.30 (d, 1H) ppm.

## 10 Biological Assay

The following assay methods are utilized to identify compounds of formula 1 which are effective in inhibiting the activity of certain phosphatases, an example of which, as used herein, is PTP1B.

15

### PTP1B ASSAY

The assay for PTP1B inhibition is based on the detection of the complex between Malachite Green dye and free phosphate, liberated from the phosphopeptide substrate by PTPase action. To each well of a flat – bottom assay plate is added 45  $\mu$ L assay buffer [- 50 mM Imidazole, pH 7.2, 100 mM NaCl, 5 mM DTT, and 1 mM EDTA] and 10  $\mu$ L of peptide substrate [Tyrosine Phosphopeptide –1, END(pY)INASL, 80  $\mu$ M FAC, Promega Cat # V256A] to a total volume of 55  $\mu$ L. Test compound (10  $\mu$ L in up to 50% DMSO) is then added. The mixture is incubated for 5 min, at 25°C, and 10  $\mu$ L of PTP-1B [Protein Tyrosine Phosphatase 1B (PTP-1B); FAC 0.8 nM; Upstate Biotechnology, Cat # 14-109 lot # 19045 ] is then added. The mixture is incubated for 30 min at 25 °C. Subsequently, 25  $\mu$ L of Malachite Green reagent [10% (w/v) Ammonium Molybdate in water, Sigma Cat # A-7302, 0.2 % (w/v) Malachite Green in 4 N HCl, Aldrich Cat # 21,302-0] is then added. After incubation for 15 min at 27°C, the reaction endpoint is measured at 640 nM.

30

The Malachite Green reagent is prepared by mixing one volume of 10% Ammonium Molybdate with 3 volumes of 0.2% Malachite Green solution, stirring at room

temperature for 30 min and then filtering and collecting the filtrate. The Malachite Green reagent is treated with 10  $\mu$ L of 5% Tween 20 per 990  $\mu$ L of dye solution before use.

Test compounds are typically examined at six concentrations in the above assay.

- 5 For this assay, the IC<sub>50</sub> (microM) of the enzyme inhibition assay represents the concentration of compound at which 50% signal has been inhibited.

As illustrated by the Examples, embodiments of the present invention demonstrate utility in inhibiting protein tyrosine phosphatase PTP 1B. The compounds  
10 of the present invention set forth in the present examples are found to inhibit protein tyrosine phosphatase PTP1B with inhibitory potencies (IC<sub>50</sub>'s) of about 0.01 microM to about 20 microM. In general, embodiments of the present invention useful for pharmaceutical applications will have inhibitory potencies (IC<sub>50</sub>'s) for a protein of interest of below about 100, or in an embodiment below about 50 microM. For particular  
15 applications, lower inhibitory potencies are useful, thus compounds that inhibit protein tyrosine phosphatase PTP1B with inhibitory potencies (IC<sub>50</sub>'s) in a range of about 0.01 microM to about 10 microM may be useful. In another embodiment, compounds that inhibit protein tyrosine phosphatase PTP1B with inhibitory potencies (IC<sub>50</sub>'s) of about 0.01 microM to about 3 microM may be useful.

20

Embodiments of the compounds of the present invention demonstrate utility as inhibitors of protein tyrosine phosphatases (PTPases). Embodiments of the invention described herein are additionally directed to pharmaceutical compositions and methods of inhibiting PTPase activity in a mammal, which methods comprise administering, to a  
25 mammal in need of inhibition of PTPase activity, a therapeutically defined amount of a compound of formula (I), defined above, as a single or polymorphic crystalline form or forms, an amorphous form, a single enantiomer, a racemic mixture, a single stereoisomer, a mixture of stereoisomers, a single diastereoisomer, a mixture of diastereoisomers, a solvate, a pharmaceutically acceptable salt, a solvate, a prodrug, a  
30 biohydrolyzable ester, or a biohydrolyzable amide thereof.

Thus, the present invention provides a method of inhibiting a PTPase, comprising the step of administering to a mammal in need thereof a pharmacologically effective amount of a compound of the present invention. The invention further provides a



pharmaceutical composition comprising a pharmaceutically acceptable carrier and a pharmacologically effective amount of a compound of the present invention sufficient to inhibit a PTPase. A PTPase - inhibiting amount can be an amount that reduces or inhibits a PTPase activity in the subject.

5

Additionally provided is a pharmaceutical composition comprising a pharmaceutically acceptable carrier and a pharmacologically effective amount of a compound of the present invention sufficient to treat type I diabetes.

10

Further, the present invention provides a pharmaceutical composition comprising a pharmaceutically acceptable carrier and a pharmacologically effective amount of a compound of the present invention sufficient to treat type II diabetes.

15

Further, the present invention provides a pharmaceutical composition comprising a pharmaceutically acceptable carrier and a pharmacologically effective amount of a compound of the present invention sufficient to treat immune dysfunction.

20

Further, the present invention provides a pharmaceutical composition comprising a pharmaceutically acceptable carrier and a pharmacologically effective amount of a compound of the present invention sufficient to treat AIDS.

25

Further, the present invention provides a pharmaceutical composition comprising a pharmaceutically acceptable carrier and a pharmacologically effective amount of a compound of the present invention sufficient to treat autoimmune diseases

30

Further, the present invention provides a pharmaceutical composition comprising a pharmaceutically acceptable carrier and a pharmacologically effective amount of a compound of the present invention sufficient to treat glucose intolerance.

Further, the present invention provides a pharmaceutical composition comprising a pharmaceutically acceptable carrier and a pharmacologically effective amount of a compound of the present invention sufficient to treat obesity.

Further, the present invention provides a pharmaceutical composition comprising a pharmaceutically acceptable carrier and a pharmacologically effective amount of a compound of the present invention sufficient to treat cancer.

5 Further, the present invention provides a pharmaceutical composition comprising a pharmaceutically acceptable carrier and a pharmacologically effective amount of a compound of the present invention sufficient to treat psoriasis.

10 Further, the present invention provides a pharmaceutical composition comprising a pharmaceutically acceptable carrier and a pharmacologically effective amount of a compound of the present invention sufficient to treat allergic diseases

15 Further, the present invention provides a pharmaceutical composition comprising a pharmaceutically acceptable carrier and a pharmacologically effective amount of a compound of the present invention sufficient to treat infectious diseases.

20 Further, the present invention provides a pharmaceutical composition comprising a pharmaceutically acceptable carrier and a pharmacologically effective amount of a compound of the present invention sufficient to treat inflammatory diseases.

25 Further, the present invention provides a pharmaceutical composition comprising a pharmaceutically acceptable carrier and a pharmacologically effective amount of a compound of the present invention sufficient to treat diseases involving the modulated synthesis of growth hormone.

30 Further, the present invention provides a pharmaceutical composition comprising a pharmaceutically acceptable carrier and a pharmacologically effective amount of a compound of the present invention sufficient to treat diseases involving the modulated synthesis of growth factors or cytokines which affect the production of growth hormone.

Further, the present invention provides a pharmaceutical composition comprising a pharmaceutically acceptable carrier and a pharmacologically effective amount of a compound of the present invention sufficient to treat Alzheimer's disease.

The compounds of the present invention can be administered to subjects in need of inhibition of PTPase activity. Such subjects can include, for example, horses, cows, sheep, pigs, mice, dogs, cats, primates such as chimpanzees, gorillas, rhesus monkeys, and, most preferably humans.

5

The pharmaceutical compositions containing a compound of the invention may be in a form suitable for oral use, for example, as tablets, troches, lozenges, aqueous, or oily suspensions, dispersible powders or granules, emulsions, hard or soft capsules, or syrups or elixirs. Compositions intended for oral use may be prepared according to any  
10 known method, and such compositions may contain one or more agents selected from the group consisting of sweetening agents, flavoring agents, coloring agents, and preserving agents in order to provide pharmaceutically elegant and palatable preparations. Tablets may contain the active ingredient in admixture with non-toxic pharmaceutically-acceptable excipients which are suitable for the manufacture of tablets.  
15 These excipients may be for example, inert diluents, such as calcium carbonate, sodium carbonate, lactose, calcium phosphate or sodium phosphate; granulating and disintegrating agents, for example corn starch or alginic acid; binding agents, for example, starch, gelatin or acacia; and lubricating agents, for example magnesium stearate, stearic acid or talc. The tablets may be uncoated or they may be coated by  
20 known techniques to delay disintegration and absorption in the gastrointestinal tract and thereby provide a sustained action over a longer period. For example, a time delay material such as glyceryl monostearate or glyceryl distearate may be employed. They may also be coated by the techniques described in U.S. Patent Nos. 4,356,108; 4,166,452; and 4,265,874, incorporated herein by reference, to form osmotic therapeutic  
25 tablets for controlled release.

Formulations for oral use may also be presented as hard gelatin capsules where the active ingredient is mixed with an inert solid diluent, for example, calcium carbonate, calcium phosphate or kaolin, or a soft gelatin capsules wherein the active ingredient is  
30 mixed with water or an oil medium, for example peanut oil, liquid paraffin, or olive oil.

Aqueous suspensions may contain the active compounds in an admixture with excipients suitable for the manufacture of aqueous suspensions. Such excipients are suspending agents, for example sodium carboxymethylcellulose, methylcellulose,

hydroxypropylmethylcellulose, sodium alginate, poly-vinylpyrrolidone, gum tragacanth and gum acacia; dispersing or wetting agents may be a naturally-occurring phosphatide such as lecithin, or condensation products of an alkylene oxide with fatty acids, for example polyoxyethylene stearate, or condensation products of ethylene oxide with long chain aliphatic alcohols, for example, heptadecaethyl-eneoxycetanol, or condensation products of ethylene oxide with partial esters derived from fatty acids and a hexitol such as polyoxyethylene sorbitol monooleate, or condensation products of ethylene oxide with partial esters derived from fatty acids and hexitol anhydrides, for example polyethylene sorbitan monooleate. The aqueous suspensions may also contain one or more coloring agents, one or more flavoring agents, and one or more sweetening agents, such as sucrose or saccharin.

Oily suspensions may be formulated by suspending the active ingredient in a vegetable oil, for example arachis oil, olive oil, sesame oil or coconut oil, or in a mineral oil such as a liquid paraffin. The oily suspensions may contain a thickening agent, for example beeswax, hard paraffin or cetyl alcohol. Sweetening agents such as those set forth above, and flavoring agents may be added to provide a palatable oral preparation. These compositions may be preserved by the addition of an anti-oxidant such as ascorbic acid.

Dispersible powders and granules suitable for preparation of an aqueous suspension by the addition of water provide the active compound in admixture with a dispersing or wetting agent, suspending agent and one or more preservatives. Suitable dispersing or wetting agents and suspending agents are exemplified by those already mentioned above. Additional excipients, for example, sweetening, flavoring, and coloring agents may also be present.

The pharmaceutical compositions of the invention may also be in the form of oil-in-water emulsions. The oily phase may be a vegetable oil, for example, olive oil or arachis oil, or a mineral oil, for example a liquid paraffin, or a mixture thereof. Suitable emulsifying agents may be naturally-occurring gums, for example gum acacia or gum tragacanth, naturally-occurring phosphatides, for example soy bean, lecithin, and esters or partial esters derived from fatty acids and hexitol anhydrides, for example sorbitan monooleate, and condensation products of said partial esters with ethylene oxide, for

example polyoxyethylene sorbitan monooleate. The emulsions may also contain sweetening and flavoring agents.

Syrups and elixirs may be formulated with sweetening agents, for example  
5 glycerol, propylene glycol, sorbitol or sucrose. Such formulations may also contain a demulcent, a preservative and flavoring and coloring agents. The pharmaceutical compositions may be in the form of a sterile injectible aqueous or oleaginous suspension. This suspension may be formulated according to the known methods using  
10 suitable dispersing or wetting agents and suspending agents described above. The sterile injectable preparation may also be a sterile injectable solution or suspension in a non-toxic parenterally-acceptable diluent or solvent, for example as a solution in 1,3-butanediol. Among the acceptable vehicles and solvents that may be employed are water, Ringer's solution, and isotonic sodium chloride solution. In addition, sterile, fixed oils are conveniently employed as solvent or suspending medium. For this purpose, any  
15 bland fixed oil may be employed using synthetic mono- or diglycerides. In addition, fatty acids such as oleic acid find use in the preparation of injectables.

The compositions may also be in the form of suppositories for rectal administration of the compounds of the invention. These compositions can be prepared  
20 by mixing the drug with a suitable non-irritating excipient which is solid at ordinary temperatures but liquid at the rectal temperature and will thus melt in the rectum to release the drug. Such materials include cocoa butter and polyethylene glycols, for example.

25 For topical use, creams, ointments, jellies, solutions of suspensions, etc., containing the compounds of the invention are contemplated. For the purpose of this application, topical applications shall include mouth washes and gargles.

The compounds of the present invention may also be administered in the form of  
30 liposome delivery systems, such as small unilamellar vesicles, large unilamellar vesicles, and multilamellar vesicles. Liposomes may be formed from a variety of phospholipids, such as cholesterol, stearylamine, or phosphatidylcholines.

Also provided by the present invention are prodrugs of the invention. Pharmaceutically-acceptable salts of the compounds of the present invention, where a basic or acidic group is present in the structure, are also included within the scope of the invention. The term "pharmaceutically acceptable salts" refers to non-toxic salts of the compounds of this invention which are generally prepared by reacting the free base with a suitable organic or inorganic acid or by reacting the acid with a suitable organic or inorganic base. Representative salts include the following salts: Acetate, Benzenesulfonate, Benzoate, Bicarbonate, Bisulfate, Bitartrate, Borate, Bromide, Calcium Edetate, Camsylate, Carbonate, Chloride, Clavulanate, Citrate, Dihydrochloride, Edetate, Edisylate, Estolate, Esylate, Fumarate, Gluceptate, Gluconate, Glutamate, Glycolylarsanilate, Hexylresorcinate, Hydrabamine, Hydrobromide, Hydrochloride, Hydroxynaphthoate, Iodide, Isethionate, Lactate, Lactobionate, Laurate, Malate, Maleate, Mandelate, Mesylate, Methylbromide, Methylnitrate, Methylsulfate, Monopotassium Maleate, Mucate, Napsylate, Nitrate, N-methylglucamine, Oxalate, Pamoate (Embonate), Palmitate, Pantothenate, Phosphate/diphosphate, Polygalacturonate, Potassium, Salicylate, Sodium, Stearate, Subacetate, Succinate, Tannate, Tartrate, Teoclate, Tosylate, Triethiodide, Trimethylammonium and Valerate. When an acidic substituent is present, such as-COOH, there can be formed the ammonium, morpholinium, sodium, potassium, barium, calcium salt, and the like, for use as the dosage form. When a basic group is present, such as amino or a basic heteroaryl radical, such as pyridyl, an acidic salt, such as hydrochloride, hydrobromide, phosphate, sulfate, trifluoroacetate, trichloroacetate, acetate, oxlate, maleate, pyruvate, malonate, succinate, citrate, tartarate, fumarate, mandelate, benzoate, cinnamate, methanesulfonate, ethanesulfonate, picrate and the like, and include acids related to the pharmaceutically-acceptable salts listed in the Journal of Pharmaceutical Science, 66, 2 (1977) p. 1-19.

Other salts which are not pharmaceutically acceptable may be useful in the preparation of compounds of the invention and these form a further aspect of the invention.

In addition, some of the compounds of the present invention may form solvates with water or common organic solvents. Such solvates are also encompassed within the scope of the invention.

Thus, in a further embodiment, there is provided a pharmaceutical composition comprising a compound of the present invention, or a pharmaceutically acceptable salt, solvate, or prodrug thereof, and one or more pharmaceutically acceptable carriers, excipients, or diluents.

The compounds of the present invention selectively act as inhibitors of one PTPase in preference to one or more other PTPases, and therefore may possess advantage in the treatment of one or more PTPase – mediated disease in preference to others.

Thus, in a further aspect, the present invention provides a method for the inhibition of PTPases. In an embodiment of this aspect, the present invention provides a method for treating a disease states including diabetes, cancer, inflammation, Alzheimer's disease, psoriasis, or graft versus host disease, which comprises administering to a subject in need thereof a compound of the present invention. In an embodiment, the amount of compound administered is a pharmacologically effective amount. In another embodiment, the compound administered is a therapeutically effective amount. In another embodiment, at least one compound of Formula (I) is utilized, either alone or in combination with one or more known therapeutic agents. In another embodiment, the present invention provides method of prevention and/or treatment of PTPase – mediated human diseases, treatment comprising alleviation of one or more symptoms resulting from that disorder, to an outright cure for that particular disorder or prevention of the onset of the disorder, the method comprising administration to a human in need thereof a therapeutically effective amount of a compound of the present invention of Formula (I).

In this method, factors which will influence what constitutes an effective amount will depend upon the size and weight of the subject, the biodegradability of the therapeutic agent, the activity of the therapeutic agent, as well as its bioavailability. As used herein, the phrase "a subject in need thereof" includes mammalian subjects, preferably humans, who either suffer from one or more of the aforesaid diseases or disease states or are at risk for such. Accordingly, in the context of the therapeutic method of the invention, this method also is comprised of a method for treating a

mammalian subject prophylactically, or prior to the onset of diagnosis such disease(s) or disease state(s).

The following is a non-exhaustive listing of adjuvants and additional therapeutic agents which may be utilized in combination with the PTPase inhibitors of the present invention:

Pharmacologic classifications of anticancer agents:

1. Alkylating agents: Cyclophosphamide, nitrosoureas, carboplatin, cisplatin, procarbazine
2. Antibiotics: Bleomycin, Daunorubicin, Doxorubicin
3. Antimetabolites: Methotrexate, Cytarabine, Fluorouracil
4. Plant alkaloids: Vinblastine, Vincristine, Etoposide, Paclitaxel,
5. Hormones: Tamoxifen, Octreotide acetate, Finasteride, Flutamide
6. Biologic response modifiers: Interferons, Interleukins

Pharmacologic classifications of treatment for Rheumatoid Arthritis (Inflammation)

1. Analgesics: Aspirin
2. NSAIDs (Nonsteroidal anti-inflammatory drugs): Ibuprofen, Naproxen, Diclofenac
3. DMARDs (Disease-Modifying Antirheumatic drugs): Methotrexate, gold preparations, hydroxychloroquine, sulfasalazine
4. Biologic Response Modifiers, DMARDs: Etanercept, Infliximab
- Glucocorticoids

Pharmacologic classifications of treatment for Diabetes Mellitus

1. Sulfonylureas: Tolbutamide, Tolazamide, Glyburide, Glipizide
2. Biguanides: Metformin
3. Miscellaneous oral agents: Acarbose, PPAR agonists such as Troglitazone, DPP-IV inhibitors, Glucokinase activators
4. Insulin, insulin mimetics, insulin secretagogues, insulin sensitizers



## 5. GLP-1, GLP-1 mimetics

## Pharmacologic classifications of treatment for Alzheimer's Disease

1. Cholinesterase Inhibitor: Tacrine, Donepezil
- 5 2. Antipsychotics: Haloperidol, Thioridazine
3. Antidepressants: Desipramine, Fluoxetine, Trazodone, Paroxetine
4. Anticonvulsants: Carbamazepine, Valproic acid

## Pharmacologic classifications of treatment for Hyperlipidemia

- 10 1. HMG CoA reductase inhibitors Inhibitor: Mevinolin
2. cholestyramine
3. fibrates

In another embodiment, the present invention provides a method of treating PTPase mediated diseases, the method comprising administering to a subject in need thereof, a therapeutically effective amount of a compound of Formula (I) in combination with therapeutic agents selected from the group consisting of alkylating agents, antimetabolites, plant alkaloids, antibiotics, hormones, biologic response modifiers, analgesics, NSAIDs, DMARDs, glucocorticoids, sulfonylureas, biguanides, acarbose, PPAR agonists, DPP-IV inhibitors, GK activators, insulin, insulin mimetics, insulin secretagogues, insulin sensitizers, GLP-1, GLP-1 mimetics, cholinesterase inhibitors, antipsychotics, antidepressants, anticonvulsants, HMG CoA reductase inhibitors, cholestyramine, and fibrates. In another embodiment, the present invention provides the pharmaceutical composition of the invention as described above, further comprising one or more therapeutic agents selected from the group consisting of alkylating agents, antimetabolites, plant alkaloids, antibiotics, hormones, biologic response modifiers, analgesics, NSAIDs, DMARDs, glucocorticoids, sulfonylureas, biguanides, acarbose, PPAR agonists, DPP-IV inhibitors, GK activators, insulin, insulin mimetics, insulin secretagogues, insulin sensitizers, GLP-1, GLP-1 mimetics, cholinesterase inhibitors, antipsychotics, antidepressants, anticonvulsants, HMG CoA reductase inhibitors, cholestyramine, and fibrates.

Generally speaking, the compound of the present invention or Formula (I), is administered at a dosage level of from about 0.003 to 500 mg/kg of the body weight of

the subject being treated, a dosage range between 0.003 and 200 mg/kg, or a dosage range between 0.1 to 100mg/kg of body weight per day. The amount of active ingredient that may be combined with the carrier materials to produce a single dosage will vary depending upon the host treated and the particular mode of administration. For example, a formulation intended for oral administration to humans may contain 1 mg to 2 grams of a compound of Formula (I) with an appropriate and convenient amount of carrier material which may vary from about 5 to 95 percent of the total composition. Dosage unit forms will generally contain between from about 5 mg to about 500 mg of active ingredient. Also a dosage form intended for topical administration to the skin may be prepared at .1% to 99% compound to topical excipient ratio and a dosage form intended for inhaled administration of .01 to 200 mg of compound in a suitable carrier to deliver an inhaled dosage of compound. Dosage unit forms of systemically delivered compound will generally contain between from about 5 mg to about 500mg of active ingredient. This dosage has to be individualized by the clinician based on the specific clinical condition of the subject being treated. Thus, it will be understood that the specific dosage level for any particular patient will depend upon a variety of factors including the activity of the specific compound employed, the age, body weight, general health, sex, diet, time of administration, route of administration, rate of excretion, drug combination and the severity of the particular disease undergoing therapy.

While the invention has been described and illustrated with reference to certain embodiments thereof, those skilled in the art will appreciate that various changes, modifications and substitutions can be made therein without departing from the spirit and scope of the invention. For example, effective dosages other than the dosages as set forth herein may be applicable as a consequence of variations in the responsiveness of the mammal being treated for PTPase – mediated disease(s). Likewise, the specific pharmacological responses observed may vary according to and depending on the particular active compound selected or whether there are present pharmaceutical carriers, as well as the type of formulation and mode of administration employed, and such expected variations or differences in the results are contemplated in accordance with the objects and practices of the present invention.